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Nipissing Forest
Independent Forest Audit
April 1, 2001 – March 31, 2006

Final Report

By:
Arbor Vitae Environmental Services Ltd.

Submitted Oct. 18, 2006

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1 EXECUTIVE SUMMARY

ArborVitae Environmental Services Ltd. performed an independent forest audit (IFA) of the management of Nipissing Forest for the period April 1, 2001 to March 31, 2006. The audit was undertaken using the Independent Forest Audit Process and Protocol (IFAPP), prepared by the Ministry of Natural Resources (MNR or the Ministry). The audit examined compliance with the Crown Forest Sustainability Act, the terms of relevant licenses, especially Sustainable Forest Licence 542053, held by Nipissing Forest Resource Management Inc. (NFRM), and the management plans in place for the Forest. The IFA assessed the performance of NFRM (often referred to as the "the Company") in this report) and the Ministry, including the effectiveness of management practices and the sustainability of forest management. The audit period spans the last three years of the term of the 1999 FMP and the first two years of the term of the 2004 FMP.

The focus of the audit's activities was a site visit to the Forest which included: a review of management documents at the office of NFRM in Callander and at the MNR's office in North Bay, interviews with staff of the Company, the MNR, shareholders in the Company, and consultations with members of the Local Citizens Committee, the general public, and local First Nations. The site visit also included intensive inspections of field sites where a variety of management activities took place in the review period.

This audit makes 32 recommendations (one of which is to extend the licence) and 7 suggestions (Table 15) and identifies several best practices. The findings are directed approximately equally to the MNR and the Company.

Probably the most challenging issues the audit dealt with concern the wood supply commitments on the forest and the relatively underachievement of planned harvest levels. The underharvest is not indicative of a management deficiency, but reflects the economic context in which forest management is taking place. Lack of markets for some commodities, most notably low-grade hardwoods, has been a fact of life on the forest for a period spanning several FMPs, and so there is a history of underharvest. Planned harvest levels continue to exceed those levels likely to be harvested at least partly because of commitments which exist for the Forest's wood. Plans are obligatorily written to fulfil the commitments and therefore, the important aspects of plans are not achieved and management deviates from that identified in the otherwise very well-considered plans. Options for other management scenarios are stymied to some extent by the need to plan to the commitment levels. Several recommendations are directed at Corporate MNR to address this situation.

Operations on the Forest were found to be of high quality. The quality of harvesting operations was good and there were no serious issues regarding renewal.
However, the Audit Team did observe that the regeneration on some sites could have benefited from site preparation, and that some sites were suffering from a high level of competition and could have benefited from tending. These observations led to two recommendations directing the Company to refine the means by which it makes decisions regarding site preparation and tending. These recommendations are intended to reinforce the direction in which the Company seems heading under the guidance of its recently-hired silvicultural forester.

The Audit Team believes that the management of wildlife habitat and old growth on the forest are in need of improved direction from Corporate MNR. The Audit Team believes that improved guidance needs to be provided regarding the level of contribution from protected areas that is appropriate to contribute to old growth targets and other ecological targets. For wildlife habitat, the 2004 FMP, as is the case with plans for many other forests, permits declines of an extent to which the audit team believes is unwise. The level of permitted decline in wildlife habitat is not well rationalized by Corporate MNR, and so the Audit Team believes that direction to planning teams which permits broad and extensive declines in wildlife habitat needs to be revised.

The Company's compliance performance and monitoring system are both good. Although non-compliances do occur in management operations, there are no patterns which indicate systemic issues or an unreasonable level of transgressions. MNR's compliance monitoring efforts are implemented by very qualified individuals, however the Audit Team believes that a lack of compliance funding hinders the MNR's ability to undertake compliance activities consistent with its mandate. A recommendation to corporate MNR to increase the level of compliance funding is made.

The Local Citizens Committee functions well, and seems ready to take on more challenges than are currently being provided by the MNR. There are opportunities for the Committee to improve its level of functioning, but these are relatively minor in comparison to the positive attributes of the Committee. Nonetheless the improvements included in the suggestions and recommendations of this report should be addressed to ensure the committee's effectiveness.

The integration of First Nations interests in forest management has a couple of distinct aspects on this Forest. First, there is a desire of the First Nations to increase their opportunities related to Forest Management, and this is understandable given their connection with the Forest and desire to capture more of the benefits of commercial forest management. Second, there exists a good record of performance on the part of the MNR and the company in providing opportunities to First Nations. So although there is an understandable desire on the part of the local First Nations to increase their economic benefits from the forest, this audit found that the Company and the MNR have made very commendable progress and results in working towards this.

Overall, this audit found that management of the Nipissing Forest was in substantial compliance with the laws, licences and Forest Management Plans in effect during the audit period, and that the Forest is being managed within the bounds of sustainability as defined and directed by the Ministry of Natural Resources. The Audit Team recommends extending the term of the Sustainable Forest Licence held by NFRM for a further five-year period.

Chris Wedeles, Lead Auditor

2 INTRODUCTION

This document presents the results of the Independent Forest Audit (IFA) of the Nipissing Forest, covering activities during the period April 1, 2001 to March 31, 2006. The audit was undertaken by a team of professionals following the direction of the Ontario Ministry of Natural Resources' (MNR) Independent Forest Audit Process and Protocol[1] (IFAPP). The period covered by this audit includes portions of the periods encompassed by two successive Forest Management Plans (FMPs) – the first plan was in effect from April 1, 1999 to March 31 2004, and the second plan took effect on April 1, 2004 and extends through to March 31, 2009.

Prior to 1996, the Forest was managed by the MNR on behalf of the Crown. In 1996 Nipissing Forest Resource Management Inc. (NFRM) was awarded a Sustainable Forest Licence (SFL) to manage the Forest. The Forest is now managed by NFRM on behalf of its five shareholders: R. Fryer Forest Products Limited, Goulard Lumber (1971) Limited, Tembec Inc. Grant Forest Products Inc., and Hec Clouthier and Sons Inc.

The audit covers all forest management and planning activities which took place during the review period. Therefore, included in the audit are all operations on the forest implemented during the last three years of the 1999 plan, and the first two years of the 2004 plan. This audit also examined the content of the both plans, but emphasis was placed on the 2004 FMP, as the content of the 1999 plan came under scrutiny in the previous Independent Forest Audit (IFA), conducted in 2001.

The audit also reviews and assesses the activities of the Ontario Ministry of Natural Resources related to management of the Nipissing Forest. The MNR is the provincial Ministry with the primary responsibility for managing the province's Crown forests and, as such, it oversees and regulates planning and operations on the Forest. The MNR also has management responsibility for fisheries and wildlife. The MNR's involvement in management of the forest occurs primarily through its North Bay District, Nipissing Area, office.

The Crown Forest Sustainability Act (CFSA) empowers the Minister of Natural Resources to manage Crown forests in Ontario and also provides the legislative basis for the Independent Forest Audits. The scope and process of an IFA is set out in the IFAPP. The IFAPP, which is reviewed and updated annually, contains more than 300 individual audit procedures. Of these, roughly 300 apply to this IFA. The IFAPP provides very detailed instructions on how audits are to be conducted and precisely what aspects of forest management are to be reviewed and assessed. This audit was carried out in a manner consistent with the directions set out in the IFAPP.

The results of each audit procedure are not reported separately in this report. Rather, they have provided the basis for the information in the following sections (primarily Section 3). The reader should assume that if a topic related to any procedure identified in the IFAPP is not discussed in the body of this report, that it was assessed and found to be in compliance with the requirements identified in the IFAPP.

In the following sections, many noteworthy aspects of the management of the forest are discussed. These discussions are followed in some instances by recommendations or suggestions. The IFAPP gives explicit definitions of these terms:

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[1] Ontario Ministry of Natural Resources. 2006. Independent Forest Audit Process and Protocol. Queen's Printer for Ontario.

Recommendation - "sets out a high level directional approach to addressing a non-conformance. In most cases, recommendations follow from the observation of material non-conformances. In some instances, however, auditors may develop recommendations to address situations where they perceive a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed."

Suggestion - "value-added advice which reinforces adaptive resource management and contributes to continuous improvement."

Of these two types of findings, recommendations are the more serious. Both recommendations and suggestions can be directed towards the Company and/or the Ministry of Natural Resources. Finally, if the Audit Team feels that an aspect of forest management is exceptional it may be identified as a best practice. The IFAPP provides the following definition:

Best practices – "practices so identified should be 'exceptional', not situations in which forest management is simply meeting a good forest management standard. Highly effective novel approaches to various aspects of forest management may represent best practices. Similarly, applications of established management approaches which achieve remarkable success may represent best practices."

The Audit Team found situations which should be corrected by the tenure holder acting in concert with district or regional MNR offices. Other situations which we believe need corrective action, however, are more appropriately addressed by the corporate sections of MNR. These situations involve issues related to the general framework of forest management in Ontario, and although they have been manifested locally (hence, they surfaced in this audit), their resolution lies not in the field offices of MNR, but in the Main Office, Forest Management Branch, or other corporate parts of MNR. Issues which we believe should be addressed by the field units of MNR (i.e. District or Regional Offices) are addressed in recommendations or suggestions which simply identify "MNR". Recommendations or suggestions which we believe should be addressed by central branches or sections of MNR identify "corporate MNR" as having primary responsibility.

The team which conducted this audit consisted of five individuals, all experienced forest auditors, and all specialists in forest management. Appendix B provides details of their qualifications, roles and responsibilities.

Forest management in Ontario (and elsewhere) uses a variety of technical terms. We have tried to explain terms as they are used in this document, but readers unfamiliar with the forest management planning process in Ontario are referred to the document "A Guide to Forest Management Planning"[2] (available from the Ministry of Natural Resources) for further explanations. In addition Appendix D lists the acronyms used in this report.

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[2] Ontario Ministry of Natural Resources. 1997. A Guide to Forest Management Planning. Ontario Ministry of Natural Resources Forest Information Series. 16 p.

If after consulting the document, readers remain uncertain regarding any issue discussed in this report, they are encouraged to contact the Ministry of Natural Resources, Forest Management Branch[3] for fuller explanations.

2.1 AUDIT PROCESS

2.1.1 Purpose and overview of the process

The CFSA directs the Minister of Natural Resources to conduct a review of each tenure-holder every five years to ensure that the licensee has complied with the terms and conditions of its licence. The Independent Forest Audit fulfils this mandate, as well as complying with the direction to the Ministry laid out in Terms and Conditions #86 and 87 and Appendix 25 of the 1994 Class EA decision[4] to "*undertake operational audits, through the appointment of suitably qualified independent Audit Teams, which will include an assessment of compliance with the timber management planning process, approved Timber Management Plans, implementation manuals, and provincial policies, procedures, and legislation*". The Declaration Order[5] confirmed the importance of the IFAs and imposed some additional conditions on MNR; direction regarding the conduct of the audits is provided in Ontario Regulation 160/04 under the CFSA.

The IFAPP document states that the purpose of the audits is:

- *"assess to what extent forest management planning activities comply with the Forest Management Planning Manual and the [Crown Forest Sustainability] Act;*
- *assess to what extent forest management planning activities comply with the Act and with the forest management plans, with the manuals approved under the Act, and the applicable guides;*
- *assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;*
- *compare the forest management activities carried out with those that were planned;*
- *assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and*
- *review and asses a licensee's compliance with the terms and conditions of the forest resources licence."*

2.1.2 Process

The IFAPP describes each of the components of the audit process and contains the audit protocol, which constitutes the main framework for the audit. There are eight principles within the audit protocol (reproduced in Appendix C). Each principle contains a series of criteria, which, if met, will result in the principle being achieved. For each criterion, a number of procedures are used to assess the auditees' compliance and effectiveness. As noted above, there are approximately 300 individual procedures that are applicable to this audit of the Nipissing Forest.

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[3] Ministry of Natural Forest Management Branch, Roberta Bondar Place, Suite 400 70 Foster Drive, Sault Ste. Marie, ON. P6A 6V5. Ph(705) 945-6611

[4] Koven, A. and E. Martel. 1994. Reasons for Decision and Decision – Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario. Ontario Environmental Assessment Board.

[5] Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, approved by Order in Council 1389/03 on June 25, 2003.

The audit commenced with the preparation of a detailed audit plan[6], which described the procedures to be used during the audit and assigned responsibilities to members of the Audit Team. A pre-audit meeting was held between representatives of the Audit Team, NFRM Inc., the Ministry of Natural Resources and the Local Citizens' Committee (LCC). The primary purposes of the meeting were to familiarize the auditees with the audit process, review the Audit Plan, and to select the sites to be inspected in the field during the audit.

The focus of the audit was an intensive six-day visit, which included the following:

- Review of relevant files at the office of the Company in Callander, and at the offices of the Ministry of Natural Resources in North Bay;
- Interviews with NFRM Inc. staff, shareholders, commitment holders and overlapping licensees, MNR personnel, First Nations individuals, members of the LCC, and members of the public; and
- Field inspection of many representative sites where forest management activities were undertaken during the term covered by the audit, examining:
    - Results of harvesting and silvicultural operations in a range of forest types on different site types;
    - Results of practices intended to safeguard wildlife, aquatic, and tourism values; and
    - Results of road construction, maintenance and abandonment practices.

Table 1 shows the sample size and sampling intensity for key operations. The IFAPP requires that audits sample between 10 and 20% of the area treated during the audit period for harvesting, site preparation and other key activities. The audit exceeded this desired minimum sample size for all activities, and exceeded the target range for most.

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[6] ArborVitae Environmental Services Ltd. Nipissing Independent Forest Audit Plan, April 7, 2006.

Table 1. Sampling intensity of the audit

Feature	Total in Audit Period	Total Sampled	Sample Intensity (%)[e]
Harvest (ha)[a]	18,126 (22,176)	5,122	23.1
Site Preparation (ha)[a]	4,260 (4,520)	978	21.6
Natural Regeneration (ha)[b]	10,891	1555	14.2
Artificial Regeneration (ha)[a]	5,412 (6,565)	1965	29.9
Tending (ha)[a]	10,998 (12,673)	1364	10.8
Free-to-Grow Surveys (ha)[a]	5418 (6,772)	2539	37.4
2004 FRT Areas (ha)[c]	2,709	1,775	65.5
Areas of Concern (no.)	Approx. 600	81	Approx.13.5
Roads (km)[d]	1, 183 (1,420)	Approx 500	35.2

[a] – Data for these activities were not finalized for the final year (2005/06) of the audit term. Shown not in parentheses are the totals for the four previous years within the audit term. The number in parenthesis include the estimates for the final year of the audit term.

[b] – Due to changes in the way natural regeneration was reported during the audit term, values for 2001 to 2003 were estimated based on total achievements for the 1999-2004 FMP period; values for the years 2004 and 2005 were estimated proportional to the harvest areas for those years.

[c] - Indicates the area of sites reviewed as part of a financial "specified procedures" review for all Forest Renewal Trust areas in 2004. The IFAPP requires that the IFA sample at least 20% of these areas.

[d] – No primary or secondary roads were constructed during the audit term. Number in the row indicates km of road upon which maintenance activities took place. The Audit Team drove on over 500 km of roads during the site inspection, however a portion of these may not have had maintenance during the audit term, so the sample intensity for this activity is considered a maximum possible estimate.

[e] – The sample intensity is calculated using the total sampled and the totals of the 5-year audit period

Table 1 is intended to portray an approximate level of effort only. There are several factors which preclude too-precise an interpretation of the figures presented in the tale. Although roughly 55 stops were made during the field inspection portion of the audit, more than one aspect of forest management was inspected at most stops. For example, at stops where harvesting had taken place, harvesting practices, compliance issues, road construction, Area of Concern (AOC) protection, site preparation, and regeneration activities may all have been inspected. Finally, although areas are shown in Table 1, it should be noted that we did not inspect every hectare of the blocks we visited – such a level of effort would be infeasible.

Examples of operations were examined in each major forest unit present on the Forest, representing a range of harvesting systems, harvest operators, and silvicultural treatment packages. These included sites that had been harvested in the audit period using clearcut, shelterwood harvest and selection harvest systems. A number of sites where renewal activities had been conducted during the audit period were visited to evaluate the appropriateness and quality of these treatments and to perform an initial evaluation of their effectiveness. These included sites that were site prepared, planted, and those for which natural regeneration was reported.

Figure 1 shows the location of sites visited during the audit. Some additional sites, inspected ad hoc, during the course of the field visits are not shown on the map.

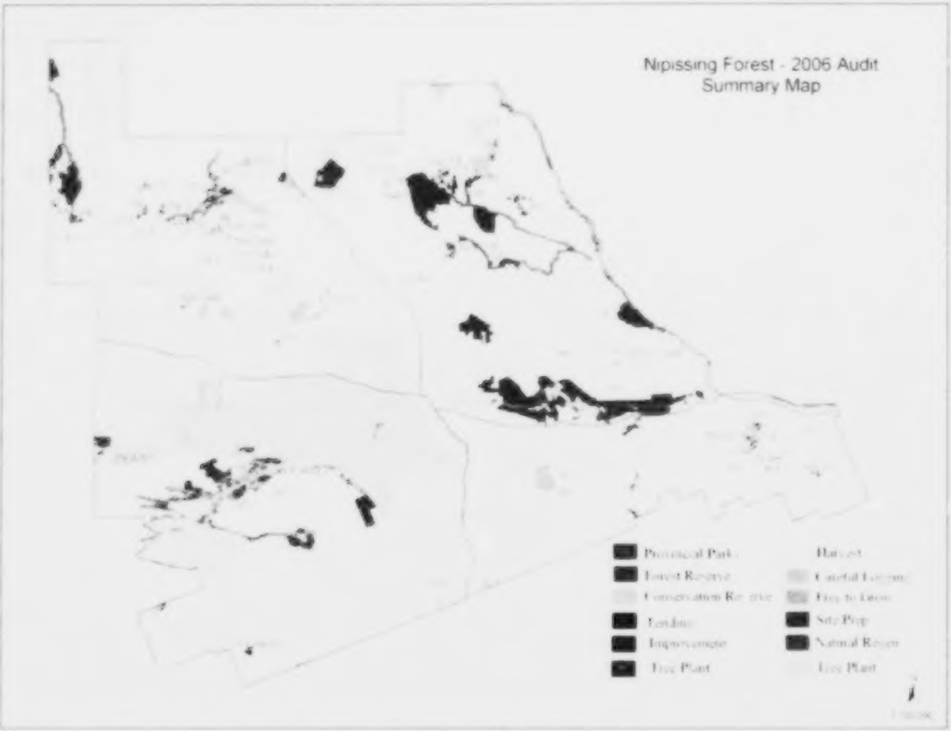

Nipissing Forest - 2006 Audit
Summary Map
Provincial Parks
Forest Reserve
Conservation Reserve
Tending
Improvement
Tree Plant
Harvest
Careful Logging
Site Prep
Natural Regen
Tree Plant

Figure 1. Locations of planned sites visited during the audit's field inspection. (Several additional sites were visited ad hoc. Parks and Reserves are shown on the map for context only – they were not visited during the audit.). Map supplied by NFRM Inc.

2.2 Forest Management Context

2.2.1 Location of Forest Management Unit

The Nipissing Forest is located in the eastern portion of central Ontario (Figure 2), encompassing the city of North Bay and Lake Nipissing. The Forest abuts the province of Quebec to the east, and to the west extends about halfway between North Bay and Sudbury. The Forest extends about 60 km north of North Bay, and about 60 km south too.

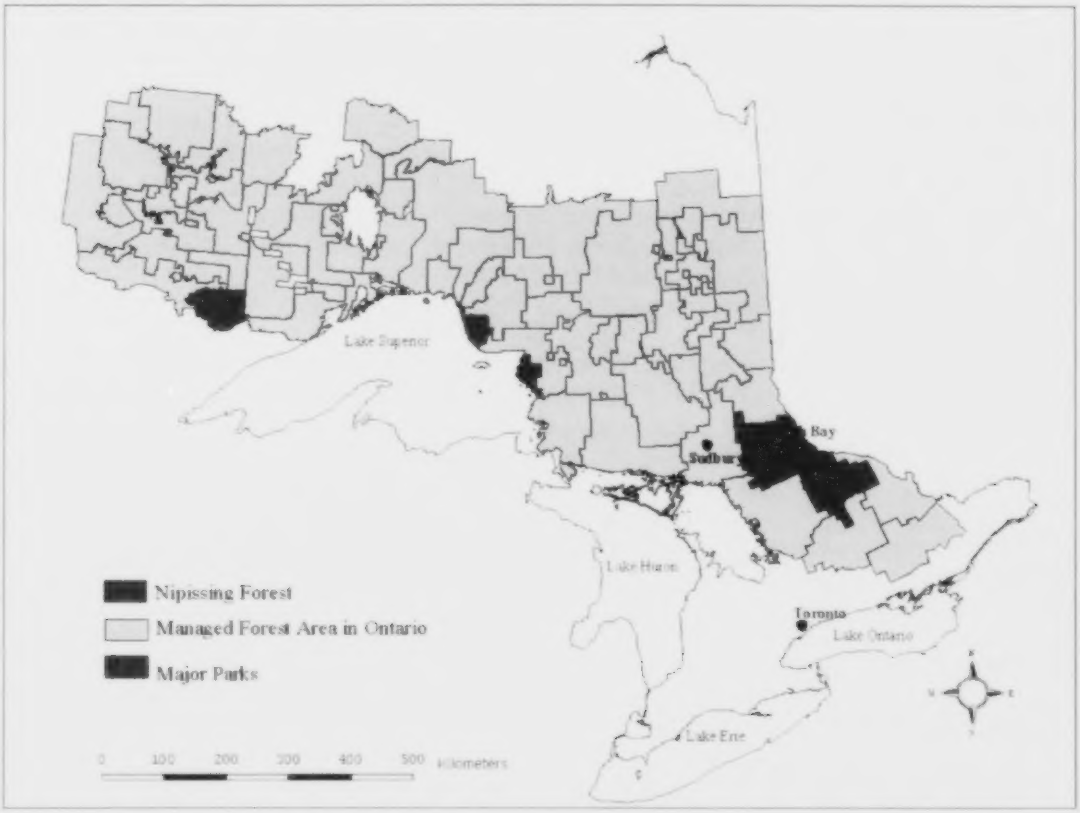

Lake Superior
Bay
Sudbury
Lake Huron
Toronto
Lake Ontario
Lake Erie
Nipissing Forest
Managed Forest Area in Ontario
Major Parks
0 100 200 300 400 500 Kilometers
N
W
E
S

Figure 2. Location of the Nipissing Forest.

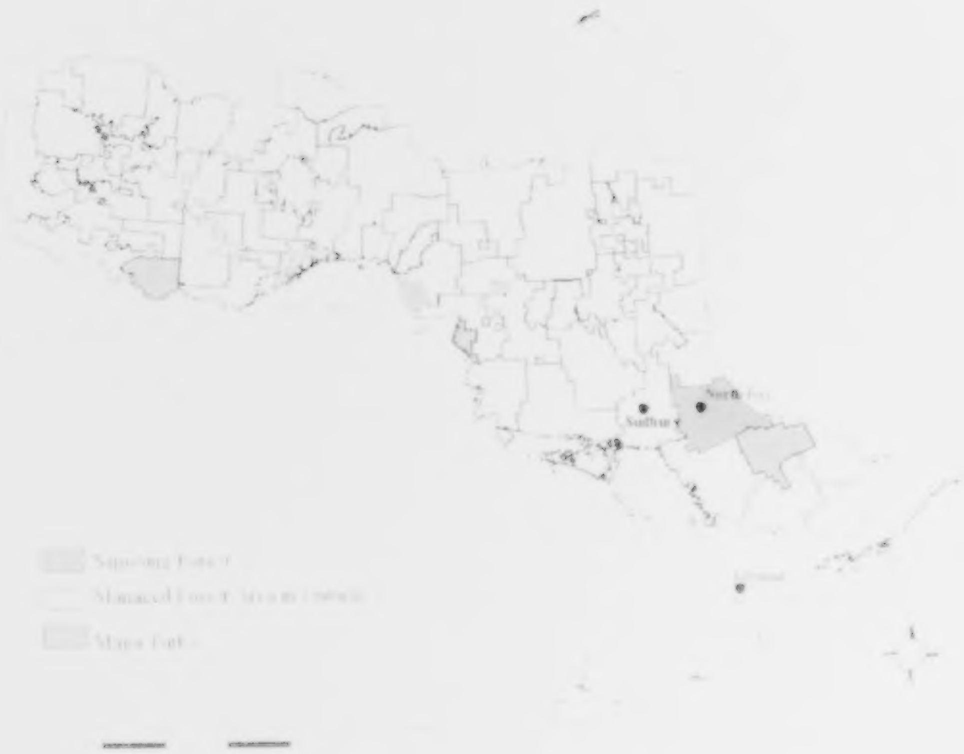
2.2.2 *Brief Description of the Forest*

This section presents an overview of some characteristics of the Nipissing Forest – more detailed description can be found in the 1999 and 2004 FMPs, which were the source of much of the material presented here.

The Nipissing Forest was one of the first SFL areas in Ontario to be certified by the Forest Stewardship Council (FSC) as meeting the standards of a well-managed forest. Because the FSC sets a high standard for quality of forest management, certification by the organization is broadly recognized as being indicative of a superior level of forest management.

The Nipissing Forest covers more than half of the MNR's North Bay District and comprises the southern portion of that district. The Nipissing Forest has a permanent population of approximately 86,000. The city of North Bay has a population of 53,000 and is a supply and communications centre for much of North-eastern Ontario. North Bay is a focal point for a ring of smaller, nearby communities.

The largest of the neighbouring centres is Sturgeon Falls (population about 6,000), which is located 38 km west of North Bay. Verner (population about 1,000), 16 km farther west, is the centre of a large agricultural community. Powassan (population



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The largest of the neighbouring centres is Sturgeon Falls (population about 6,000), which is located 38 km west of North Bay. Verner (population about 1,000), 16 km farther west, is the centre of a large agricultural community. Powassan (population about 1,200) is 33 km south of North Bay on Highway 11, and is the service centre for another agricultural community. The town of Mattawa (population about 2,500) is located 62 km east of North Bay, at the confluence of the Mattawa and Ottawa Rivers.

There are 18 existing or soon-to-be-regulated provincial parks, either partly or entirely, within the boundaries of the Nipissing Forest. The parks are: Amable du Fond, Alexander Lake Forest, Chiniguchi, French River, Jocko River, Kenny Forest, Manitou Islands, Marten River, Mashkinonje, Mattawa River, Ottawa River, Restoule, Samuel de Champlain, South Bay, Sturgeon River, Temagami River, West Sandy Island, and Widdifield Forest. In addition, there are 21 conservation reserves, either partly or entirely, within the Nipissing Forest.

Two First Nations Reserves, Dokis and Nipissing are situated in the western and central parts of the forest respectively. Two other aboriginal communities, the Mattawa-North Bay Algonquins and the Antoine First Nation, are located in the Mattawa area. The Temagami First Nation is located north of the Nipissing Forest, but use parts of the Nipissing Forest for traditional uses. The provincial government has no land use jurisdiction on the Indian Reserves, but timber extraction is an important activity on these lands and many band members are involved in timber management on the adjacent Crown lands.

The 2004 FMP lists 18 major wood processing facilities that draw at least a portion of their wood supply from the Nipissing Forest. Four mills are located in the management unit: Columbia Forest Products (Rutherglen), Goulard Lumber (Sturgeon Falls), Precut Hardwood (North Bay), and Tembec Industries Inc. (Mattawa).

According to Table FMP-1 of the 2004 FMP, the forest encompasses 1,147,084 ha, of which approximately 26%, or just over 300,000 ha is private land. The Forest also encompasses approximately 83,000 ha of park land (provincial parks and conservation reserves). No forest management activities take place on the park land encompassed by the Forest

Table 2 shows the area of managed Crown land in various land classes as indicated in the 2004 FMP. Of the Forest's total Crown area, about 82% is forested, and of the total Crown forest area, about 88% is classed as productive (i.e. forest areas capable of growing commercial trees).

Table 2. Area description of the Nipissing Forest. (Source: 2004 Nipissing Forest FMP, Table FMP-1)

Land Class	All Land Ownerships[a]		Crown Managed Forest	
	Area (ha)	Percent	Area (ha)	Percent
Water	159,542	13.9	133,394	17.5
Non-forested land	73,901	6.4	7,635	1.0
Non-Productive Forest[b]	112,530	9.8	71,615	9.4
Productive Forest[c]	801,111	69.8	549,320	72.1
Total Forested Area	913,641	79.6	620,936	81.5
Total	1,147,084	100	761,965	100

[a] - Includes Crown Managed Forest, Parks, Private, and Federal Land

[b] - Non-productive forest includes areas incapable of growing commercial trees, such a muskeg, rock, brush, etc.

[c] – Productive forest includes all forest areas capable of growing commercial trees.

Table 3 shows the area of managed Crown forest that was available for commercial forestry operations, by forest unit according to the 2004 FMP. The total area shown in Table 3 is less than the area of productive forest indicated in Table 2, because protection forest (area on fragile sites and islands), is excluded from the available Crown managed landbase.

Table 3. Area of Available Crown Managed Forest (ha). (Source NFRM worksheets used in preparation of Table FMP-3, 2004 FMP)

Forest Unit	Available Crown Managed Forest	Percentage
White Birch Poplar Mix (BW)	64,002	11.7
Yellow Birch (BY)	12,546	2.3
Tol. Hardwood Selection (HDSEL)	84,422	15.5
Tol. Hardwood Uniform Shelterwood (HDUS)	38,051	7.0
Hemlock (HE)	8,700	1.6
Lowland Mixedwood (LWMX)	23,757	4.4
Mixed Conifer Lowland (MCL)	25,259	4.6
Mixedwood (MW)	75,008	13.8
Jack Pine (PJ)	11,082	2.0
Jack Pine Upland Black Spruce Mix (PJSB)	14,947	2.7
Poplar (PO)	42,945	7.9
Red Pine (PR)	11,118	2.0
White Pine Seed Tree (PWST)	22,236	4.1
White Pine Uniform Shelterwood (PWUS)	59,708	11.0
Spruce Fir (SF)	51,462	9.4
TOTAL	545,243	100

The Nipissing Forest is in the transition zone between the boreal and the Great Lakes-St. Lawrence (GLSL) forest regions. The boreal forest, covers much of northern

Canada, extending from the Yukon to Labrador, and is characterized by conifers, such as black and white spruce, jack pine, and balsam fir, and shade-intolerant hardwoods, such as trembling aspen and white birch. The GLSL forest extends across central Ontario and southern Quebec. The growing season is longer and the climate milder in the GLSL forest, so it has a greater diversity of tree species. Deciduous species include sugar maple, yellow birch, as red oak, red maple and largetooth aspen. Conifer species include red and white pine, hemlock, and white cedar. The transition zone between the two forest regions is characterized by a mix of the species common to each zone. In the northern portion of the Nipissing Forest, the boreal elements are more common, with boreal conifer species and intolerant hardwoods more common than in the south. In the southern and central portion of the forest tolerant hardwoods are more common. Red and white pine forests are spread across the forest.

Like most Ontario forests, the Nipissing Forest supports a variety of wildlife species. As with the tree species, the diversity of wildlife in the Forest reflects the fact that it is a transition between the boreal and GLSL regions; species from both regions are present. Moose, a common boreal ungulate, are found throughout the Forest, except in the heavily populated or agricultural areas. White-tailed deer, generally a GLSL species, are found primarily in the southern portion of the Forest. The Loring deer yard, located in the southern portion of the Forest, is one of the province's most important deer wintering areas.

The 2004 FMP notes that the sole endangered species to be found on the Nipissing Forest is the bald eagle. Ontario's Natural Heritage Information Centre (NHIC) contains records of several other VTE (Vulnerable, Threatened, or Endangered) species, including the endangered Loggerhead Shrike. However, the shrike has not been recorded nesting in the forest and the small number of records in the NHIC are probably for transient individuals. (Furthermore, the shrike does not use forested habitat). Other VTE species for which the NHIC contains records are least bittern, Blanding's turtle, eastern hog-nosed snake, and Massasauga rattlesnake. As with the loggerhead shrike, these records are few in number and not necessarily indicative of resident populations.

2.2.3 Relevant management issues

Transition Forest

The Nipissing Forest is a transition forest with elements of both the Great Lakes-St. Lawrence Forest, and the boreal forest. As is described above, the forest includes some very typical Great Lakes-St. Lawrence forest types, such as tolerant hardwood communities, and some boreal associates, such as jack pine /black spruce. This requires the company to implement a broader variety of harvesting and silviculture techniques than in most of Ontario's SFLs. Both the Company and the MNR are required to have a broader array of expertise for both planning and operational aspects of forest management.

Other Forest Users

The Nipissing Forest is proximal to several population centres (North Bay is in the middle of the Forest). Because of this, and the very aesthetically appealing nature of much of the forest, it has a high level of use for a variety of recreational activities including hunting, snowmobiling, and cottaging. Each of these, and other activities, requires that forest management be undertaken in such a way as to minimize or ameliorate potential negative impacts. These uses are reflected in the large number of recreation-oriented Areas of Concern (AOCs) in place in the forest, and in the high number of Resource Stewardship Agreements (RSAs) which the Company has implemented with other resources users on the Forest.

Figure 3. Wildflowers, such as these painted trillium contribute to the aesthetic qualities of the forest which make it popular for recreational pursuits.

Management of low-quality hardwoods

One of the most difficult issues to address on this forest is the question of what approach to use in managing low quality hardwood stands, many of which are dominated by maple. The quality level of these stands eroded because, until the late 1970's, they were customarily cut by diameter limit, which is equivalent to high-grading, leaving only the small and poor quality trees. Many of these stands have been cut in this manner 4 – 6 times during the past century, and have a medium to low level of quality. Table FMP-2 of the 2004 FMP indicates that there is 130,000 ha of maple working group area in the Crown managed productive forest.

In general, these stands are managed by removing the poorest quality timber to make room for higher quality stems. The harvest volume will consist of a high proportion of pulpwood and fuelwood, and little sawtimber or veneer. Where the quality level is moderate and where volumes are high, operators might be able to harvest without the need for stand improvement payments. Stands with low volumes and low quality will need stand improvement payments if they are to be cut. Management of these stands is complicated by the difficulty in identifying stand quality based on Forest Resource Inventory information, especially since, in the case of the Nipissing Forest, the FRI is somewhat old. The supplemental inventory information being collected by NFRM staff will help to better identify the quality of tolerant hardwood stands.

Upgrading the quality of these stands is a slow process, and it has a significant impact on the management of the Nipissing Forest because there is such a large area of these stands. Adding to the pressures that depress the price of this material is the abundance of it in central Ontario, and the low level of usage by existing mills. While the situation appears to defy a rapid solution, there is periodically optimism that a new processing plant using low-quality fibre will be built in central Ontario. There is presently such a possibility, however it is noted that the Georgia-Pacific flakeboard plant in Bancroft lasted only three years before it was closed.

Low levels of harvest utilization

The low level of harvest on the Nipissing Forest, relative to the planned level, has been an on-going issue since 1990. The 2004 FMP (section 3.2.3) identifies Utilization as one of the planning issues, and it was also identified as a concern in the previous IFA, conducted in 2001. The Trend Analysis (Appendix A) reports that the actual harvest area has averaged roughly 50% of the planned area of harvest between 1990 and 2004.

The primary reason for the low actual harvest area is that many of the stands in the Nipissing Forest, especially those dominated by hardwood, are of low commercial desirability (as described above). The Trend Analysis comments on the poor markets for hardwood pulpwood (both tolerant and intolerant species) and the 2004 FMP also remarks that cedar and hemlock are also in low demand.

During the past three completed plan terms on the Nipissing Forest, 40% of the planned harvest has been in tolerant hardwood stands, and only 40% of the planned harvest area has been taken. Over the same period, the intolerant hardwood (poplar and white birch) and the conifer clearcut (spruce, jack pine, balsam fir) forest units each represent approximately 26 and 22% of the planned harvest area, respectively. In both cases, the actual harvest has been roughly 50% of planned.

The low utilization level is an important issue on this forest and it will be discussed in many places throughout this report, especially in the sections on Harvest (3.4.2) and Sustainability (3.7).

3 SUMMARY OF AUDIT FINDINGS

3.1 COMMITMENT

An assessment of commitment to Sustainable Forest Management (SFM) is based on a review of written statements that speak to a commitment to SFM (*e.g.* policy documents, legislation, regulations, *etc.*) and demonstrable actions of SFM (*e.g.* communication, planning, operations, monitoring, reporting, *etc.*). There are several procedures in the IFAPP to assess commitment of both the MNR as the regulatory agency, and NFRM as the SFL holder.

NFRM has a corporate Forest Policy which addresses its vision and mission, and articulates guiding principles related to excellence of performance, sustainable forest ethic, forest environment, environmental protection, forest diversity and planning horizons. NFRM staff are aware of the elements of the policy and shareholders espoused views of their roles in contributing to management the forest which were very similar to, and indicated like-mindedness with, NFRM's Forest Policy.

A better indicator of commitment than familiarity with the corporate policy is level of effort and quality of performance of company staff. In this regard, the Audit Team notes a very high level of dedication on the part of the company employees, all of whom expressed sincere desires to maintain a productive forest, healthy from both an ecological and socio-economic perspectives.

Corporately stewardship values are evidence through the company's provision of abundant training and education opportunities for its staff, its investments in research and development, public education, and forest improvement projects.

In the case of MNR there are broad and widely-encompassing documents such as the Policy Framework for Sustainable Forests, Beyond 2000, Ontario's Framework of Forest Policy and Authority and the legislation of the Crown Forest Sustainability Act. MNR staff were knowledgeable of their corporate policies and legislation related to SFM. As with NFRM staff, MNR personnel displayed a high level of commitment to management of the forest.

3.2 PUBLIC PARTICIPATION

3.2.1 Local Citizens Committee

The Local Citizen's Committee, which is a requirement in Ontario's Forest Management Process, is intended, as described in the FMPM, to provide a vehicle for public input into decisions related to forest management. This mandate is consistent with that identified in the LCC's Terms of Reference (TOR), which were updated in 2005. The TOR identify the purpose of the committee as:

> *"The Nipissing Local Citizens Committee is comprised of representatives from a range and balance of interests. Its task is to represent people and organizations*

> *that have an interest in the management of the Nipissing Forest, and assist in communication and awareness in the public.*
>
> *"The Committee assists the author of the Nipissing Forest management plan, members of the forest management planning team and the Ministry of Natural Resources North Bay District Manager in the preparation and implementation of the forest management plan.*
>
> *"The Committee may also be asked to advise and make recommendations on resource management issues, other than forest management."*

An LCC has been in existence in the North Bay District since 1992. The previous IFA, conducted in 2001 concluded that the LCC was, in general, well-functioning, and that assessment is consistent with the overall findings of this audit. There are, however, several aspects of the LCC which bear specific discussion.

Members of the LCC who were interviewed by the Audit Team described the meetings as being conducted in a fair and open manner, in which each member is provided opportunities to voice opinions and concerns. No interests dominated discussions and an atmosphere of conviviality was apparent. Some members of the LCC expressed a concern that, at times the meetings were conducted in a manner too rigid to allow for full discussion of complex issues, and that more flexibility may be needed at times to accommodate cultural differences in committee members. The Audit Team feels that these topics, although definitely worthy of consideration, can and should be addressed by the LCC without any direction from the IFA.

A review of LCC meeting minutes and discussions with MNR staff indicated the following meeting frequency: 2001 – five meetings, 2002 – five meetings, 2003 – five meetings, 2004 – two meetings, 2005 – six meetings. Over the audit term there were several instances in which the LCC met (either for a normal meeting, or for a field trip) for which no minutes or records of the meetings seem to have been kept (e.g. Meetings: Oct. 17, 2002, Dec. 12, 2002, Jan. 16, 2003). However, over the last couple of years record keeping has improved, so the situation seems in hand.

Membership on the LCC does not include individuals from several of the interests identified in the 1996 and 2004 FMPMs (e.g. woodsworkers). This fact is recognized in the 2005 TOR. Although it is not always practical for all interests identified in the FMPMs to be represented on LCCs, some members of the committee expressed concern about under-representation of some interests, and the LCC has recently passed a motion recommending that the MNR actively pursue recruitments for the vacancies on the LCC. The Audit Team supports this initiative through Recommendation # 1.

One very striking aspect of the LCC is the gender imbalance of its membership. Of the committee's 15 regular members, only one is a woman. Although somewhat outside the bounds of the IFA's mandate, we have included this topic in Recommendation # 1.

Recommendation # 1

The MNR, with assistance from the LCC, should attempt to recruit new members so that the committee has representation from a broader range of interests.

Suggestion # 1

During the process of recruiting more members for the LCC, efforts should be made to address the committee's gender imbalance.

The LCC as it is presently constituted consists of 15 members, some of whom have alternates. The average number of members attending meetings during the period was 8.5, with some meetings attended by as few as 5 or 6 members. However, for most recent meetings, attendance has been higher than for those held earlier in the audit term. Nonetheless, the Audit Team notes that the TOR for the LCC does not identify a quorum that must be present for meetings to take place, or for decisions to be made. The Audit Team believes that in order to ensure that the LCC functions in a manner which represents its members, a quorum should be established – this is addressed in Suggestion # 2.

Suggestion # 2

The MNR and LCC should amend the committee's terms of reference to identify a quorum for meetings and decision-making.

The LCC appears to be well-assisted by the MNR; all members of the committee to whom we spoke expressed satisfaction with the level of support from the MNR. Two areas for improvement in the MNR's role and involvement are noted, however. First, it was notable to the Audit Team, and to some LCC members, that the MNR District Manager did not attend any LCC meetings during the audit term. Although the District Manager is represented by his staff at LCC meetings, and they relay discussions of substantive issues to the District Manager, the message of the DM's sincere interest is hard to deliver consistently by proxy. The Audit Team's strong impression is that the District Manager is committed to the LCC, however we believe the establishment of a stronger rapport and an affirmation of commitment would best be served by the DM's attendance in person.

Recommendation # 2

The MNR District Manager should attend more LCC meetings.

The second aspect of the MNR's support for the LCC which can be improved is the provision of training materials, for both new and presently-serving members. It was noted by several LCC members that the forest management planning process is very complex, and it is difficult for non-professionals to "get up to speed" and remain conversant in all the aspects of the planning in which the LCC is expected to, or can, take a role or interest. Recommendation #3 directs the MNR and LCC to review areas of training needs and knowledge gaps on the LCC and develop a plan to address them.

Recommendation # 3

The MNR and LCC should review the training needs of the committee's members, and identify measures to ensure that they are provided with training experiences and materials on an on-going basis.

One of the recommendations from the 2001 IFA was that "*The MNR should assist the LCC in improving its communication to the public and in preparing progress reports related to its function as required by the FMPM*" (Recommendation #1) As noted in the body of the recommendation, it's rationale is based on direction from the (1996) FMPM. The 2004 FMPM, which has replaced the 1996 FMPM contains similar direction for the LCC to produce reports and other documentation intended to inform the public of its activities. During the five-year audit period, the LCC produced one newsletter (which we were informed was written for the most part by the MNR). The LCC report produced as supplementary documentation to the 2004 FMP was authored by one of the committee's members, but was not vetted by the committee as a whole. Therefore, it appears that the efforts of the committee to communicate its activities are still not meeting the direction of the FMPM, nor have they satisfied the intent of the previous audit's recommendation. Recommendation # 4 is intended to address this.

Recommendation # 4

The MNR and LCC should work together in improving the committee's communication to the public so that the committee can better serve this aspect of its intended role.

The Audit Team heard from several LCC members who do not feel that the committee is being used to its potential by the MNR. This is consistent with the Audit Team's own impressions. The members of the LCC are experienced and becoming very knowledgeable about forest management and its issues in central Ontario. The MNR has invested time and effort in organizing meetings, and nurturing the committee, and could recoup more of its "investment" by asking more of the committee. Some members felt that the MNR's requests of it (such as participating in meetings, attending public information centres, and reviewing amendment classification decisions), were not consistent with its present or potential abilities. Roles such as reviewing annual reports, commenting on monitoring and compliance were identified as areas where the committee could provide additional value to managing the forest. The Audit Team concurs that the MNR should consider asking the LCC to take on additional roles related to forest management planning, and this is noted in Suggestion # 3.

Suggestion # 3

The MNR should consider expanding the role of the LCC related to forest management by providing the committee with increased opportunities for input into the implementation and monitoring of the planning and management processes.

The above assessment of the LCC has identified some areas for improvement in the committee and the manner in which it functions. Although the Audit Team believes there are opportunities for improvement, the team's overall assessment of the LCC is very positive. Committee members expressed enthusiasm and willingness to play a role in stewardship of the forest. The MNR supports the committee well and there appears to be a collaborative and constructive rapport between committee members and between the committee and the MNR. The recommendations and suggestions of this audit are not intended to be critical, but are intended to assist the committee in meeting the mandates identified in its Terms of Reference and in the FMPM.

3.2.2 FMP Standard Public Consultation Process

The FMPM outlines the required timing and distribution of notices for each stage of the FMP process. The Supplementary Documentation of the 2004 FMP provides a Public Consultation Summary that confirms notices were prepared and distributed to the public and First Nations in a timely fashion and through a range of appropriate local media types, including First Nations media.

The required consultation was completed as per the standards of the 1996 FMPM. In addition, the public in the communities of North Bay, Mattawa, and Sturgeon Falls were provided with extra consultation opportunities including two supplemental field trips, an open house questionnaire, and additional information centres at the draft plan review stage.

The MNR public consultation documentation binder associated with the 2004 FMP was found to be very well organized and documented all the formal and informal public notices and mail-outs. The mailing list was accurately updated for each public consultation mail-out, any new attendees at the information centres or other new contacts were added. Overall NFRM and the North Bay MNR implemented an excellent and pro-active public consultation program for the 2004 FMP.

The auditors reviewed the public correspondence documentation binder and found excellent document control and tracking of public comments received and responses to those comments.. Each public comment was assigned a "Receiving Correspondence Tag" which outlined the date received, receiving organization, correspondence number, new or old client, client number, type of correspondence (i.e. letter fax, email , phone, personal, or comment sheet), date recorded, response required and comments.

Public comments requiring a response were responded to in a timely manner and were well tracked with a "Sending Correspondence Tag". There were a total of 166 different public comments received for the 2004 FMP and appropriate responses or action was taken in a timely manner by MNR and NFRM.

3.2.3 Native People's Consultation

There are five First Nations with an interest in the Nipissing Forest: Dokis First Nation, Nipissing First Nation, Temagami First Nation, the Antoine Algonquins, and the Mattawa-North Bay Algonquins. The FMPM requires that Native communities with an interest in forest management be offered an opportunity to participate in the Forest Management Native Consultation Program, in which special efforts are made to engage them in consultation during plan preparation. The option was offered to all five First Nations during the preparation of the 2004 FMP, and none chose to pursue it. Review of documentation and interviews with First Nations representatives confirmed that all the

First Nations participated through the standard public consultation process.

In addition to the standard means of consultation, First Nations interests in forest management are addressed through an Aboriginal Working Group, which acts as a conduit and information exchange body between the forest industry, the MNR and the area's First Nations.

Although the First Nations all report an open rapport with the Licence holder, representatives of the communities in general reported degrees of contentment with the economic opportunities being provided ranging from disappointment to tentative satisfaction. In some instances the issue comes back to capacity on the part of the First Nations, and the need for training. For example, although four of the First Nations (all except Temagami) have harvest allocations on the forest, for many years they did not harvest their entire allocations. In 2004/05 for example, only the Mattawa First Nation achieved its allocation. In addition, although silvicultural work opportunities are being provided to the First Nations, not all the work offered is being completed. Capacity and training again appear to present limitations.

One impediment identified by the First Nations is that the contracting opportunities being offered to them are not a sufficient basis upon which to develop capacity. The SFL on the other hand, is working within the confines of the existing licence in terms of providing opportunities. We note that the harvesting allocations for First Nations has increased substantially. The present version of the SFL for the Forest (dated 2005) contains requirements for harvesting opportunities to be offered, through Memoranda of Agreement, to the Dokis, Nipissing, Mattawa, and Antoine First Nations totalling 8.0 % of the AHA; this is an increase over the 5.6% required to be offered to First Nations in the previous (2002) version. We also note that the First Nations harvesting operations achieved a comparable level of utilization to the company's shareholders. In addition, we note that the Company has provided very significant opportunities for First Nations to participate in its stand improvement efforts (discussed more fully in Section 3.4.3).

The provision of economic opportunities and training are being addressed in a progressive manner largely through the Aboriginal Working Group (AWG), although one-on-one discussions and negotiations are key components of addressing the issues.

Another impediment felt by the First Nations is that they do not have a share in ownership of the SFL. Some feel that in the absence of such a share, they are negotiating from a position of weakness which hinders their potential. With the possible future amalgamation of the Temagami Crown Unit into the Nipissing Forest, and the subsequent revisions to the SFL which will be necessary, the First Nations are hopeful that requirements to provide broader economic opportunities may be incorporated into the licence.

The Aboriginal Working Group provides the venue for these, and other discussions related to the interests of First Nations in forest management to take place in an organized and thoughtful manner. All parties involved in the AWG recognized its important role the group plays. The Audit Team concurs that the AWG is an important vehicle in fostering First Nations interests and that that its success is due to the sincere efforts of all parties involved . Although there remains progress to be made in satisfying the aspirations of some of the First Nations, the Audit Team believes that the Company, the MNR, and the First Nations have done a very commendable job in working together to address First Nations' interests on the Forest, and there has been definite, tangible progress.

Best Practice # 1

NFRM and MNR staff and First Nations members are commended for their cooperative efforts in supporting First Nations interests on the Forest.

The various reports addressing First Nations values (i.e. Draft Native Background Information Report, Preliminary and Final reports on the Protection of Identified Native Values) were produced through the planning process. In general, the First Nations expressed disappointment with the levels of funding available to undertake the reports, and noted that in some instances the maps, values validation, and reports are not sufficient to protect native values on the forest. The Audit Team concurs that the levels of funding provided for these activities are inadequate.

Recommendation # 5

The MNR, with input from the Aboriginal Working Group, should identify appropriate levels of funding to undertake/ complete values identification and reports for the next FMP. Corporate MNR should provide sufficient resources to adequately document Native values on the Forest.

3.2.4 Annual Work Schedule Public Inspection

Good efforts are made by NFRM and the MNR to identify, contact and consult persons who may be directly affected by operations included in AWSs. Notices are also provided to aboriginal communities, band councils and other native organizations, mining claim holders, trappers, and private land owners. The Local Citizens Committee is also provided an opportunity to review the AWS prior to its approval by the District Manager. An AWS summary map showing the location of all harvesting, road construction and maintenance, and silvicultural activities is available to the public for $25 or a tabloid sized map is also available for free.

One aspect of the consultation found somewhat wanting is that complete records public consultation were kept only with the MNR version of the AWS. AWS versions kept at the NFRM office included only portions of the records or no records at all. It is a planning requirement that complete copies of AWSs are to be available for the public to review at MNR and SFL offices throughout their duration. The Audit Team interprets this requirement to include copies of records of public consultation. To date the MNR is the keeper of complete consultation records and NFRM files whatever consultation records they receive in their versions of the AWSs. It was difficult to determine whether or not the public consultation requirements had been met for AWSs, FMPs and amendments based on the incomplete records kept in the NFRM copies of these documents.

Recommendation # 6

A complete record of all public consultation including all ads, and mail outs should be kept with both MNR and SFL versions of AWSs, FMPs and amendments.

3.3 FOREST MANAGEMENT PLANNING

3.3.1 *Planning Team Activities*

This audit reviewed the activities of the Planning Team assembled to prepare the 2004 FMP. The team included the following capable, trained, and experienced staff:

- NFRM General Manager;
- NFRM Planning Forester;
- Two NFRM Consultant Planning Foresters;
- MNR Area Forester;
- MNR Wildlife Biologist;
- MNR Fisheries Biologist;
- MNR District Planner;
- MNR Area Supervisor;
- LCC Representative; and
- Five First Nations Representatives

Five members of the planning team were Registered Professional Foresters (RPF's). Nine task teams were formed to help the planning team complete the 2004 FMP. The task teams included: strategic forest management modelling, landscape modelling, roads planning, AOC planning, public consultation, compliance, utilization, old growth, and socio-economic matters. The planning team was supported by 25 advisors including members from MNR North Bay District, MNR Northeast Region, NFRM, Ministry of Tourism, Ministry of Northern Development and Mines, Ministry of Environment, Algonquin Forest Authority, MNR Cultural Heritage, Ontario Parks, and MNR foresters from the surrounding MNR districts and the Temagami Area. Overall, the planning team has good representation of professional foresters and biologists, and a capable team of advisors.

One notable absence from the planning team is an individual with expertise in Park Management. The FMPM notes that the complement of expertise on the planning team will "normally" include an individual with this expertise. Although parks experts were included as advisors to the planning team, in Section 3.3.6 we note that the Parks are being counted on to supply the majority of the old growth area. Given that this is a high-profile objective for the Forest, and given this, it seems logical to have a parks person on the planning team. Recommendation # 14 in Section 3.3.6 addresses this need.

The planning team was effective in dealing with the myriad of issues encountered in development of the FMP. The plan's terms of reference identified 20 issues to be addressed by the planning team during the development of the 2004 FMP, including technical, strategic and operational issues. The planning team developed and implemented effective strategies to address the identified issues.

The Audit Team was impressed by the good working relationship between the MNR and NFRM. There was, and continues to be, regular contact between the organizations with informal discussion and review as circumstances require. This helped streamline planning processes by reducing workloads, required alterations, and review and approval timelines. The planning team, MNR, and NFRM routinely met with members of the public to identify, discuss, and resolve concerns throughout the audit period. Letters, meetings, field trips, phone calls, newspaper ads, mail-outs and information centres were all used to communicate with the public. The good rapport between the company and the MNR was also evident in the quality of the FMP development and implementation processes.

The terms of reference for development of the 2004 FMP was submitted for approval on February 28, 2002, approved by the district manager on the same date, and by the MNR Regional director some months later. The terms of reference met all of the required elements of the FMPM. The 2001-02 Northeast Region FMP training schedule indicated a number of courses were offered to the planning team including: introduction to FMP, data preparation and overview, Strategic Forest Management Model (SFMM), SFMM Tool, developing objectives, Silvicultural Ground Rules (SGRs), , analyzing management alternatives, and Socio-Economic Impact Model (SEIM).

One concern was raised by the MNR regarding the late identification of the draft allocations, which made it difficult to fully integrate the wildlife habitat needs, particularly for late-winter moose habitat. The draft harvest allocations were available later than planned as a result of the effort needed by NFRM to plan for implementation of the NDPEG guidelines and balance the available harvest area among the Forest's many operators.

The wildlife biologist used the planning inventory to identify that late winter habitat was slowly declining and limiting the carrying capacity for moose on the Nipissing Forest (which, at 0.47 moose/sq. km was already below the target level of 0.60 - 0.65 moose/sq. km). An overlay of the draft harvest areas with the moose late winter habitat identified a total of 975 problem stands in 30 harvest blocks that were isolated mature and over-mature conifer. Harvesting these stands was expected to have negative impacts on late winter habitat as they were isolated from other late winter patches.

If the harvest allocations would have been available sooner, it would have been practical to adjust the harvest blocks in the FMP planning process so that the habitat concerns could be addressed. However, the impending planning deadlines meant that a make-shift approach had to be developed, which in the end required more over-all effort by requiring assessment of the stands during pre-harvest inspections and incorporation into the peninsular and insular residual patches identified as part of implementation of the NDPEG requirements.

Recommendation # 7

The planning team for the 2009 FMP should ensure that the draft harvest areas are available early enough in the planning process to allow for spatial habitat assessments to be incorporated into the final allocations.

Interaction with the Public

NFRM staff (and other company staff) routinely make themselves available to the public and interest groups by attending the LCC meetings, organizing meetings with specific interest groups such as trappers or First Nations, conducting field tours, and through educational work. In addition the Company spent considerable time and energy developing and implementing educational efforts directed towards the public and educational institutions. These efforts included:

- Field trips for Lakehead University and University of Toronto forestry students;
- Supporting the field school for Sir Sandford Flemming College;
- Providing tours for school teachers in cooperation with the Research Partnership;
- Providing numerous field trips for the general public in association with development of the FMP; and
- Providing field tours for annual meetings/conferences of the Canadian Institute of Forestry, Ontario Professional Foresters Association, and Nature Ontario.

3.3.2 Resource Stewardship Agreements

The Resource Stewardship Agreement process proceeded well and smoothly on the Nipissing Forest, with assistance from the Ministry of Culture and Tourism and the Northern Ontario Tourism Outfitters Association.

During 2002, NFRM sent letters to all of the registered tourism establishments located within the Nipissing Forest, as well as those based outside the Forest whose areas of interest extended into the Forest. There was a high level of interest in developing RSA's, with the result that by mid-2003, 34 RSA's had been signed and relevant prescriptions incorporated, reviewed and approved in the 2004 FMP. Since then, an additional RSA has been concluded and a second has been agreed to and was in the process of being signed at the time of the field visit. This Forest has by far the highest number of RSA-holders on it that the auditors have ever encountered. The audit team spoke to five of these RSA-holders, some of whom had drive-in operations and others who described their operation as remote. All respondents said that the negotiation process had been very smooth and that there had been no harvesting in the relevant areas since the RSA's were signed. Their overall opinion was that the RSA's were useful in that they clarified the nature and location of their key values and there is an accepted way for the Company to operate once harvest activity does approach these areas of interest. Company management confirmed that during the 2004 plan term, very little harvesting was planned for areas close to tourism operations.

3.3.3 Sources of Direction

The FMPM requires that forest management plans pay heed to a variety of sources of strategic and planning direction, including:

- MNR's provincial goals, objectives and policies for natural resource management;
- Forest management guides (implementation manuals);
- Applicable regional- and district-level land use direction;

- MNR internal operational audits and independent audits for the management unit;
- Strategic business direction for forest-based businesses;
- The results of ongoing negotiations with Aboriginal peoples whose communities are situated in the management unit; and
- Licences regarding resource management on the Forest.

This audit found adherence to all key elements of the sources of direction. The 1999 and 2004 FMPs are well-written documents and makes consistent use of, and reference to, relevant sources of direction. Examination of field practices also satisfied the Audit Team that the sources of direction were adhered to during operations. As all audits do, this audit identified some instances in which adherence to management direction should be improved, and this is reflected in several of this audit's recommendations. However, considered as a whole, the Audit Team is satisfied that relevant sources of direction have been followed.

3.3.4 Plan Introduction

The Introduction section of the 2004 FMP contains the elements required by the FMPM, including an index to the environmental components of the Plan and a brief description of how MNR's Statement of Environmental Values under the Environmental Bill of Rights had been considered in plan development.

3.3.5 Management Unit Description

The management unit description of the 2004 FMP meets many of the FMP's requirements, but not all. The description of the historic forest condition (Section 2.2.2 of the FMP) does not address all of the requirements of the FMP. The plan's description focuses largely on the Forest's historic fire regime. Missing from the description are several elements identified in the FMPM, including: changes in forest type, biodiversity, wildlife habitat and forest productivity. Although some of these topics are covered elsewhere in the plan, it makes for disjunct reading and does not provide all the background information intended for this section of the plan.

The description of the current forest is somewhat lacking in that it does not address wildlife habitat or other forest resources as completely as required by the FMPM. Shortcomings of the description provided in the plan, including:

- Trends in predicted habitat are discussed only for a small number of species.
- The summary statement for the number of species with declining and increasing trends is incorrect. (The FMP says 11 species are increasing and 7 are decreasing, the SFMM output shows that 14 are decreasing and 7 are increasing).
- Table FMP 5 contains errors, as it does for many FMPs[7]. Given that it is wrong, the plan text should have provided the planning team's input on the trends in wildlife habitat to compensate for the table's shortcomings; and
- There is no description of species whose preferred habitat is declining or lower than expected on a regional basis.

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[7] Table FMP 5 provides levels of habitat for selected wildlife species on the forest, and the forest's contribution to habitat in the broader region and subregion. Several of the values presented in the table, which are provided to the planning team by MNR region are illogical. These errors have occurred in many other FMPs and have been identified in other IFA reports.

Recommendation # 8

The Planning Team for the 2009 FMP should ensure that the plan's description of wildlife and the historic forest meets the requirements of the FMPM.

Forest Resources Inventory

The Forest Resource Inventory (FRI) for the Nipissing Forest was prepared using aerial photography that was acquired in 1989. The 2004 FMP reports that the total Crown managed production forest area for the Nipissing Forest is 526,154 ha. Of this total, 19,057 ha, or 3.6%, is in the Barren & Scattered category, while an additional area of 24,000 ha, or 4.6%, is in the depleted category. Most of the depleted stands consist of harvest depletions from previous terms, since there have been few natural disturbances within the forest in the past 10 years. For the previous 1999-2004 FMP term, 21 ha of fire disturbance, and 577 ha of blowdown were reported.

For the preparation of the 2004 FMP, the inventory was updated to reflect actual harvest depletions to March 31, 2002. Projected harvest depletions were included for the years 2003 to 2004. Accruals, including records of silvicultural treatments and areas declared free-to-grow up to March 31, 2002, were used to prepare updated stand descriptions for barren and scattered areas. Ownerships layers and new roads were also updated. Licence area withdrawals and exclusions, as well as new parks and conservation areas contained within Ontario's Living Legacy, were reclassified as part of the inventory update process. NFRM has an excellent information system that is used to update the forest inventory on an annual basis. As well, the system tracks harvest and natural depletions, free-to-grow, status of X, Y, and Z lands, and all silvicultural activities and surveys.

The next FMP prepared for the Nipissing Forest will be the first 10-year plan written under the new (2004) FMPM. By the time of the 2009-2019 FMP, the FRI for the forest will be 20 years old, and will reach 25 years in age in the middle of the 10-year term. This is in compliance with the FIM, which requires that inventory used at the beginning of planning be no older than 20 years. However, given the vintage of the FRI, we suggest that planning for the next inventory update should commence soon.

Suggestion # 4

The MNR, in consultation with the Company, should commence planning for the next FRI update for the Nipissing Forest.

Socio-economic profile

The socio-economic profile is informative and well written – demographic and community descriptions are quite informative and indicate a high degree of dependence on at least one segment of the forest sector; the community characteristics are also quite varied. The forest use information that is available is concentrated on the forest products sector; little information appeared to have been obtained /provided by sectors such as tourism – this is a frequent gap in the development of the socio-economic profiles in Ontario forest management plans.

3.3.6 Objectives and Strategies/Management Alternatives

The 2004 FMP contains objectives that address the four required topic areas, which are:

- forest diversity;
- social and economic benefits;
- values dependent on forest cover, and
- regeneration/ silviculture.

In general, the objectives related to forest diversity and values dependent on forest cover reflect the direction in the Natural Disturbance Pattern Emulation Guideline (NDPEG), and efforts to shift the forest back in the direction of the pre-industrial forest. The objectives, and a preliminary assessment of their achievement, are listed in Table 12. Table 11 assesses the achievement of the objectives from the 1999 FMP, and a comparison of the two sets of objectives shows that those in the 2004 FMP are more specific and provide more explicit direction. This is consistent with a suggestion in the previous IFA to develop objectives that are more quantitative in nature, and hence which are more readily interpreted to provide direction.

The planning team for the 2004 FMP considered three mandatory management alternatives, which are effectively benchmarks of the potential harvest under various silvicultural funding scenarios[8], and two additional management alternatives. One of these additional alternatives was designed to obtain a timber harvest consistent with industrial demand and available funding, while at the same time still providing non-timber values and meeting the diversity and other forest management objectives. This "timber weighted" management alternative could be viewed as a scenario that met non-timber requirements and optimized timber harvesting in a manner as consistent as possible with industrial demand. The second voluntary management alternative was designed to support the tourism and recreational use of the forest, and promote wildlife. This "tourism weighted" alternative was modelled by increasing the proportion of old growth in the forest to 33%; the assumption was that tourism and recreation were favoured if a greater proportion of the forest was older. Finally, the planning team modelled a scenario that involved no harvesting and estimates of the pre-industrial disturbance regimes. This so-called null scenario was used as a benchmark to illustrate how the forest would develop if human impacts were dramatically reduced on the forest.

The comparison of the five management alternatives (3 mandatory ones and two voluntary ones) resulted in the selection of the "timber weighted" management alternative. The tourism weighted alternative did not provide a harvest that was sufficient to meet the identified industrial demand or many of the wood supply commitments, while the benefits that may have accrued to the tourism and recreation sectors could not be assessed. Nevertheless, it was interesting to see these two options compared.

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[8] The three mandatory alternatives are: i) an assessment of the timber production potential of the forest, based on available revenues for silvicultural funding; ii) an assessment of the timber production potential of the forest, based on the assumption that all required silvicultural funding is available; and iii) an assessment of the anticipated industrial demand for timber, assuming that all required silvicultural funding is available.

It is impressive that the proportion of the planned harvest area available to First Nations increased from 5.6% in the 1999 FMP to 8.0% in the 2004 FMP – this was a factor that contributed to the Best Practice identified in Section 3.2.3.

Harvest Levels

As is identified elsewhere in this report, persistently low harvest levels have characterized implementation for the past several plan terms. The factors behind the low levels of utilization are rooted in the impacts of historical operations in the forest and adverse economic conditions facing the Canadian forest products industry, and especially the Ontario industry.

Company staff indicated that there is a proposal, with an unknown probability of proceeding, for a new mill to be built by Grant Forest Products along the Highway 11 corridor that would use low quality hardwood, yet there is also a high potential for there to be additional mill closures. In short, there is no compelling reason to think that the underharvest will change in the near future.

The impacts of this underharvest are subtle – the area and age class of those forest units that are persistently underharvested will not change in the manner planned in the 2004 FMP (which assumed full use of the planned harvest). This means that the future forest will not develop as projected in the plan, which has implications for the ability of the forest managers to achieve the many plan objectives related to forest cover and composition, and associated wildlife habitat objectives. In a nutshell, the Audit Team is concerned that a good plan is not being implemented, which will lead to a different outcome than anticipated. Planning for a level of harvest that was in line with historical levels would be a more realistic approach.

Another outcome of this situation is that by planning for a higher level of harvest than that which actually materializes, the planners lose the option of planning to enhance other values. As described above, the fourth management alternative considered in the preparation of the 2004 FMP was a tourism and recreation oriented objective, that was based on the assumption that older forests, especially pine, were conducive to tourism and recreation use. The planned harvest under that scenario was 568,000 m^3/yr, which was deemed to be too low to be feasible. During the previous plan period, the actual harvest averaged 394,000 m^3/yr, and in the first year of the 2004 FMP it was 446,000 m^3. On the basis of total volume, the tourism friendly scenario would have provided more than sufficient volume to meet actual needs, although the species volumes that it would have yielded would not have met demand in all cases. The point is not that the tourism-friendly management alternative should have been selected, but rather that there would be a considerable opportunity to plan a different outcome if the planned harvest level was set at a more realistic level. Since the actual harvest has historically been in the 45 – 60% range, a planned harvest equal to approximately 75% of the AHA should provide a balance between realism and flexibility.

At present, the Company is limited in the degree to which it can adjust the planned volume. The constraint is the high percentage of the harvest, especially poplar and white birch, that is committed to various companies. In the 2004 FMP, 83% of the planned poplar harvest volume was to be committed to Grant Forest Products and more than 91% of the birch harvest volume is committed to a variety of companies. Further, some parts of the harvest on the Forest are overcommitted. The FMP notes that the

Forest cannot sustainably provide sufficient volume now or in the future to meet the white birch and tolerant hardwood sawlog commitments. Table 4 shows the commitments that are infeasible in the 2004-2009 plan period. The planned volumes shown in **Error! Reference source not found.** were derived from the anticipated levels of mill utilization in Table FMP-24 of the 2004 FMP; in some cases, additional volume of committed products is being harvested by non-commitment holders but is expected to be utilized at a mill other than the one associated with the commitment. This could be due to reasons such as excessive haul distance from a distant part of the forest to the mill in question.

Table 4. Infeasible wood supply commitments on the Nipissing Forest.

Commitment Holder	Wood Product	Commitment Volume (m3/year)	2004 Planned Volume (m3/year)	Percentage shortfall
Columbia Forest Products	White Birch and Tol Hwd Veneer	8,900	8,248	7%
Tembec - Mattawa	White Birch Sawlogs	25,900	9,820	62%
Tembec - Mattawa	Tol Hwd Sawlogs	19,950	16,388	18%

In addition, there are other commitments or potential commitments, such as the potential commitment of 150,000 m^3/yr of poplar to Grant Forest Products, that can only be met for a limited time before they become infeasible (see Section 3.8.4). It is noted that the intolerant species, which are already in shortage, and heading further into deficit, are those that were most impacted by the application of the NDPEG (see section 3.3.7 above).

The Utilization Task Team also identified a shortage of balsam and spruce pulp and poplar. Furthermore, Table FMP-15 projects an 18% decline in wood supply after ten years, with further declines in subsequent periods. The impression is one of widespread overcommitment.

A review of actual harvest data shows that many of the committed volumes were not harvested. For the main species groups, Figure 4 shows the actual harvest volume per year, averaged over the years 1999-2000 to 2004-05, the committed volume and the planned volume in the 2004 FMP. The aggregation by species in Figure 4 hides the shortfalls identified in Table 4 which apply to specific product components of the harvest. In Figure 4, it is evident that low proportions of the planned harvests of poplar (40%) or birch (56%) were actually harvested, and the actual harvests were well short of the committed volumes. Similar but less severe results were obtained in the tolerant hardwoods, while the actual SPF harvest volume exceeded the committed volume but accounted for only 48% of the planned volume. White and red pine stand out as having the lowest level of commitments, and the highest proportion of actual versus planned harvest (89%). It would appear that companies use the commitments as call options on future volume, with minimal penalty for non-use.

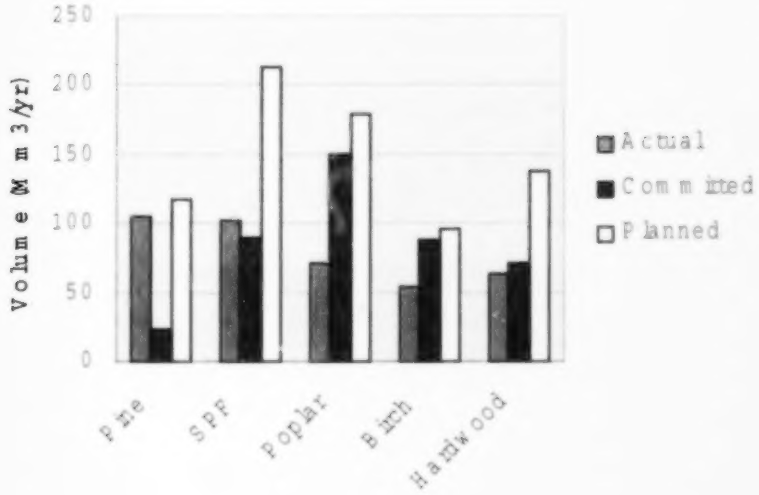

Figure 4. Actual, committed, and planned harvest volumes by species group; 1999-2000 to 2004-2005 period (M m3/yr)

In summary, on the Nipissing Forest we have the following situation:

- The volume of commitments for many species/product combinations is very high relative to the planned harvest level, and in some cases the commitment cannot be met;

- The actual harvest has historically been very low, relative to planned levels; and

- Some commitments are well in excess of actual harvest volumes, most notably those concerning poplar and white birch.

This suggests to the audit team that:

- Some of the commitments are not really necessary to mill wood supplies;
- Commitments can actually discourage harvesting; and
- The commitments remove the ability of the Company to plan for a more realistic harvest level.

Reducing the commitments on the portions of the harvest that are highly committed (and overcommitted) is a necessary condition before the Company can set a planned harvest that is more consistent with recent levels and with what is likely to be harvested in the foreseeable future. This will provide the Company with the legal ability to reduce the planned harvest. However, the SFL specifies, indirectly, what percentage of the planned harvest will be allocated to each shareholder. A general reduction of the planned harvest level would penalize the shareholders who harvest most or all of their allocation, while those who do not would be unaffected. This would not be fair.

One approach that could be taken to avoid this unfair outcome would be for the Minister to review the percentage allocations of the harvest and actual harvest performance and consider revisions. Such a review could also examine wood supply commitments.

Alternately, the MNR could issue licences for only part of the five-year harvest (e.g. the area licensed could be equivalent to two years worth of harvest allocation), with the licensing of additional area dependent on the level of harvest activity. In this way, active loggers could access to their full permitted allocation and would not be penalized for the low harvesting activity on the part of other shareholders.

In sum, the audit team feels that the planned harvest should be brought into closer alignment with recent and likely future harvest levels, but there are impediments to this. Removing the impediments is the responsibility of MNR, since the wood supply commitments and licence conditions originate from MNR. The following recommendation is directed at Corporate MNR:

Recommendation # 9

Corporate MNR, in consultation with NFRM, should review and revise the wood supply allocation mechanisms, associated licence conditions, and supply commitments on the Nipissing Forest to provide the Company with the flexibility to plan a realistic harvest and ensure that active harvesters are not penalized. In the 2009 FMP, the Company should plan for a level of harvest that is more realistic than that in the 2004 plan, while still providing adequate flexibility to respond to markets and actual stand conditions.

To prevent a recurrence of this situation, the auditors are also making the following recommendations

Recommendation # 10

Corporate MNR should develop a policy to limit the proportion of any harvest component that can be committed.

Recommendation # 11

Corporate MNR should develop a mechanism to reduce or eliminate wood supply commitments when the actual volume of timber supplied to a mill is habitually well below the commitment level.

For Recommendation # 10 above, we believe that the maximum percentage of the harvest that should be committed should be in the range of 50 to 67% to provide an appropriate level of operational and planning flexibility in management of the forest.

The species that are most underharvested relative to planned levels are hemlock, larch and cedar. The planned hemlock harvest was approximately 16,600 m^3/yr in the 1999 FMP, but the actual harvest averaged only 600 m^3/yr. Very similar situations exist with respect to cedar (planned harvest = 6,000 m^3/yr; actual harvest = 76 m^3/yr) and larch (planned harvest = 2,568 m^3/yr; actual harvest = 4 m^3/yr). The Company and MNR informed that audit team that their major concern with the low harvests was that the stands of these species tend to be old and need to be renewed. However, evidence reviewed during the site visit indicated to the audit team that the overriding interest was to increase the commercial use of these species. For example, the Utilization Task Team (see section 3.3.1) recommended reducing the renewal rate for these species from $6.00/m^3 to $0.50 /m^3 to encourage use, which was done, but had no real effect on usage, according to the Company. Since there has been a great deal of difficulty establishing hemlock regeneration, it seems to be counter-productive to reduce the renewal rate. There was also interest in issuing a Request for Proposals to encourage hemlock usage. The Audit Team doubts that some hidden demand for these species exists, since the volumes have been available for some time, and these species are not heavily used in Ontario.

The Audit Team has some sympathy for the concern to renew these species, but notes that the MNR identifies the age of hemlock old growth onset as being 180 years, and that the old growth condition can persist for more than 500 years[9]. The concern over the age of the trees seems overdone, in the opinion of the audit team. Cedar and larch are not as long lived as hemlock, with cedar and larch entering the old growth phase at 150 and 90 years of age, respectively. The duration of old growth was not estimated for these species. Most of the larch and cedar grow on wetland sites, and form all-aged stands over time, so again the concern over renewing these stands seems misplaced. Furthermore, the 2004 FMP reports that the proportion of hemlock in the current forest is roughly half of its abundance in the past, while cedar has increased slightly and larch has declined by 97%, chiefly due to the introduction of the larch sawfly. A goal of the 2004 FMP is to increase the abundance of hemlock on the forest.

The Audit Team notes that all of these species, especially hemlock, are desirable wildlife species. Given that there is clearly minimal interest in using these species and that they have other desirable values, the Audit Team feels it is appropriate to manage these species to promote non-timber values, while continuing to provide small amounts of timber to meet the existing demand. The Audit Team feels that these species are probably more valuable if left standing, and that trying to increase their utilization by reducing their stumpage value does not provide the greatest social good.

Recommendation # 12

MNR and the Company should consider managing cedar, larch and hemlock primarily for non-timber values, and refrain from taking measures to try to create a demand for these species.

Old Growth

One of the appendices to the 2004 FMP is an old growth strategy for the Nipissing Forest. The need for the strategy was recognized in the 2001 IFA where a suggestion to develop the strategy was identified. The strategy was developed in recognition of the context and direction provided by MNR's Old Growth Policy[10], the Old Growth Definitions Document[11], and the 2004 FMP's old growth objective which is : "*In general…to double the amount of area in the old growth age classes in each forest unit*"[12] The strategy is a thoughtful document, with strong links to the FMP. There are, however, a couple of aspects of the strategy which the Audit Team believes, require additional thought.

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[9] Uhlig, P., A. Harris, G. Craig, C. Bowling, B. Chambers, B. Naylor, and G. Beemer. 2003. Old Growth Definitions for Ontario. Ontario Ministry of Natural Resources, Queen's Printer for Ontario. Toronto.

The Old Growth Strategy explicitly recognizes the role of parks in contributing the old growth objectives for the forest. Table 5 shows the old growth area and associated metrics in the forest at present (2004) and those projected area for the Desired Future Forest Condition (2104). At present 17.2% of the old growth area is in parks, this is projected to increase to 39.4% by 2104. More strikingly, the area in parks which is old growth is projected to increase from 7.4% to 53.0%. Managed reserves will provide 34,487 ha of old growth in 2104, up from 280 ha today. In all, the percent of the Forest's old growth in the available portion of the forest is projected to decrease from 81.7% to 19.3%.

From these metrics, it is clear that the attainment of the old growth objectives for the forest is based on increases in old growth in parks and managed reserves. The contribution of the available forest to meeting the old growth objectives is not great. There is logic in this, as preservation is one of the objectives of park land in the Forest, and it makes sense to capture this in the Forest's old growth targets. However, it seems reasonable to ask whether the expected disproportionate contribution of parks to the Forest's old growth is appropriate. Given that, in the year 2104, only 16,165 ha of the (projected) 479,000 ha of available forest will be in old growth while 33,000 ha of the 62,270 ha of park land is expected to be in old growth, old growth areas will be distributed in a clumped manner in the Forest (in parks) and in small areas throughout the available forest (in the managed reserves). The ecological value of such a distribution may be questionable.

The Old Growth Policy does not provide meaningful direction in addressing this situation. It states that "*growth forest in parks and conservation reserves can contribute to meeting old growth objectives…*" It would be much more useful if this direction provided a thoughtful and quantitative basis for identifying appropriate contributions from parks and protected areas in meeting old growth objectives. This is addressed in Recommendation # 13. NFRM has adhered to the direction provided by the MNR in the Old Growth Policy. Nonetheless, the Audit Team believes that the disproportionate reliance on parks to meet the old growth objectives for the Forest should be examined and rationalized.

Recommendation # 13

Corporate MNR should provide quantitative direction regarding the role that parks and protected areas can play in meeting old growth objectives for SFL areas.

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[10] Ontario Ministry of Natural Resources. 2003. Old Growth Policy for Ontario's Crown Forests. Forest Policy Series Vol. 1. Queen's Printer for Ontario, Toronto.

[11] Uhlig, P., A. Harris, G. Craig, C. Bowling, B. Chambers, B. Naylor, and G. Beemer. 2001. Old Growth Forest Definitions for Ontario. Ontario Ministry of Natural Resources. Queen's Printer for Ontario, Toronto.

[12] With the exception of the spruce/fir forest unit, where the total area in forecast to decrease, so it is not possible to double the amount of area in the old-growth age class.

Suggestion # 5

NFRM and the MNR should examine the projected spatial distribution of old growth areas as identified in the Old Growth Strategy for the 2004 FMP. The next FMP should provide an ecological rationalization for the projected spatial distribution of old growth in the Forest, and if ecologically desirable, provide for a more equitable contribution of the managed forest to old growth areas in the Forest.

Table 5. Old growth areas and metrics in the Nipissing Forest (Sources: Old Growth Strategy, SFMM Selected Management Alternative output file)

Metric	2004	2104
Old Growth Area in Parks	4,583	33,003
Old Growth Area in managed reserves[1]	280	34,487
Old growth area in available forest	21,696	16,165
Total old growth area	26,560	83,655
% of old growth area in parks	17.2%	39.4%
% of old growth area in available forest[1]	81.7%	19.3%
% of parks' forests in old growth condition	7.4%	53.0%
% of available forest in old growth condition	4.4%	3.3%

[1] Managed reserves are areas in the managed Crown forest which are not available for timber harvest (e.g. AOC reserves)

[2] Available forest is forest available for timber harvesting.

In addition, we note that the planning team for the 2004 FMP did not include an individual with expertise in park management as they normally should according to the FMPM. Given that the Forest is relying on park land to contribute very heavily to one of its key ecological objectives, the Audit Team believes that the Planning Team for the next FMP should include an individual with parks expertise.

Recommendation # 14

The planning team for the 2009 FMP should include an individual with expertise in park management.

Another old growth topic of interest is the management of white pine. White pine in the forest is managed either through the seed tree system, or more commonly, using the uniform shelterwood system. The two white pine forest units are PWST (seed tree), and PWUS (uniform shelterwood). According to the old growth strategy, there were 1,234 ha of old growth PWST on the forest in 2004, and there are projected to be 4,757 ha in 2104. There are 3,032 ha in PWUS old growth in 2004, and there are projected to be 15,623 ha in 2104. In the uniform shelterwood system, stands are typically harvested with a three-cut system: a preparation/seed cut, a first removal, and a final removal. Operations are spaced about 20 – 40 years apart, beginning at about age 80, with the final removal generally at ages 120-150. For white pine, the MNR's old growth definitions document identifies that white pine enters an old growth condition at about ages 120-150. The FMP's old growth strategy identifies an old-growth onset age of 130. The old-growth strategy identifies that the old growth duration is 80-160 years, so according to these criteria, old growth white pine can be as young as 120 years, and as old as about 310 years. Given that the final removal of white pine occurs at ages 150 or younger, the white pine on the available portion of the forest do not exist in an old growth condition for long, if at all.

More importantly, the age attributed to shelterwood stands obscures important aspects of the stands characteristics. The age of a stand managed by the shelterwood system is taken to be the age of the canopy, or oldest trees in the stand. Therefore prior to a final removal, a stand could have had two harvesting operations, extracting most of the trees in the stand, and still be assigned the age of its oldest trees. Such a stand would have very different characteristics from those identified in the MNR's Old Growth Definitions document:

1. [Presence of] large old trees for species and site;
2. Complex stand structure characterized by wide variation in tree size and spacing, with multiple canopy layers and canopy gaps;
3. Large dead standing trees and accumulations of downed woody materials, tip-ups, and mounds;
4. Species composition of the forest community described through the occurrence or changing abundance of certain associated species, (e.g. herbaceous plants, lichens and other bryophytes or wildlife species);
5. Few or no signs of human disturbance;
6. Net growth equal to or less than zero;
7. Age of dominant species exceeding average natural disturbance interval for ecosystem; and
8. Forest system near or in late succession or climax stage.

It is arguable that the shelterwood system does not do a good job of enabling the existence of stands that have the characteristics associated with points 1, 3 (as snags are often cut during felling operations for safety reasons), 5, 6, and 8. Whether it meets characteristics 4 and 7 is also open to question. Prior to the final harvest, shelterwood managed stands have old trees, but it is questionable whether the community functions as old growth as defined by the MNR's Old Growth Definitions document.

The audit team believes that a strong case is necessary to validate the assumption that shelterwood stands can function as old growth. The audit team also believes that the Company and MNR should collaborate in investigating whether shelterwood managed areas can function as old growth communities; this is addressed in Recommendation # 15. Based upon the outcome of the investigation it may be necessary to modify the old growth targets and/or modify the management of white pine communities. It may be, for example that shelterwood areas could contributed at some discounted rate to the achievement of old growth targets.

Recommendation # 15

Corporate MNR, in collaboration with North Bay MNR and the company should investigate the degree to which shelterwood managed pine stands function as old growth, and if necessary provide direction on modifying the management of these stands and/or the old growth targets for white pine.

Natural Disturbance Emulation

The spatial pattern and size class distribution of disturbances was assessed, as part of the spatial sustainability assessment. This assessment involved a complex analysis, since there was no obvious template of a "natural" disturbance level. The planning team used fire data from the 1920 – 1965 period to estimate the range of "natural" disturbance sizes, and then assessed the range of disturbances from harvesting and fire over the last 20 years in order to assess the current pattern and size class distribution of disturbances. Planned harvest area sizes were determined by identifying the stands to be harvested in the 2004-09 planning period. The three frequency distributions were compared to identify the extent of the gap between the current size class frequency and template, and extent that the planned harvesting would shift the current distribution towards the template.

The template shows that the largest proportion of disturbances is in the 11 – 70 ha size class, with 44% of the template disturbances in this size class and 31% in the less than 11 ha size class. The distribution of disturbance frequency, as determined in the template, does not follow the standard pattern of declining in successively larger size classes. The lowest frequency, 2%, is associated with the 71 – 130 ha size class, and the proportion of disturbances in larger size classes rises to 8% in the greater than 1041 ha size class. Because so much literature and theory supports the notion that the percentages of disturbances decline in successively larger size classes, it is questionable whether the template used in the FMP is accurate enough to provide strong guidance at size classes larger than 71 ha. The planning team, which was one of the first in the province to develop a template, decided that they would stand with the results provided by the historical data. Since the template was developed, modifications to the template determination methodology have been made, suggesting that the template used in the 2009 FMP will differ somewhat from that used in the 2004 FMP.

McConnell Lakes Planning Area

The McConnell Lakes Area is contains a complex of 35 lakes that is described as one of the most popular recreation areas in the North Bay District, boasting an excellent cold water fishery, and attractive beaches and forests. The land is also among the most productive for forests within the Nipissing Forest. Due to increasing use pressure, MNR developed a Land Use Plan for the McConnell Lakes Area. The goal of the plan was to minimize land use conflicts while maintaining a high level of ecological quality and providing for continued use. An interim plan, dated April 1980, was produced and has not been revised subsequently.

The planning area consisted of roughly 32,375 ha in four townships in the north-east corner of the Nipissing Forest. The area was sub-divided into five zones, each of which had specific sets of direction. In general, wildlife was to be managed to increase upland game hunting opportunities by 30%, while the number of fishing user-days was to be increased by 25%. Other types of recreation were to be managed to increase the number of user days by 40% from 3,000 to 4,200 per year.

Forestry was to be conducted to support these goals. In practice, harvesting was to be designed to increase moose habitat by interspersing browse and mature conifer cover. Poplar and white birch were to be managed to increase grouse habitat while open areas were to be maintained to support upland game.

The Land Use Plan contains provisions related to harvesting, hauling, aggregate extraction and access; most of the forest management direction has become outdated. Some of the directions are also incompatible with each other while others are not well defined. For example, in zone #1, harvesting is permitted but new access can only be built to service recreation areas; in zones #1, #2, #3 and #5, intensive management (which is undefined) may be applied to improve wildlife habitat. Zone #4 consisted of extensive area with few lakes – relatively speaking, the recreational value in zone #4 was lowest.

In general, the forestry component of the McConnell Lakes Area plan reflected an era when forest cover was sometimes manipulated to increase game populations, which was seen as multiple use management. People generally did not think of the impacts of management on more recently-acknowledged ecological characteristics and related goals (such as biodiversity), and such direction is inconsistent with current and emerging direction at the site and landscape level.

Under Ontario's Living Legacy, an old growth pine area, two conservation reserves, and four Enhanced Management Areas (EMA's) were established in the McConnell Lakes Plan Area. These cover most of the areas with high scientific and recreation values in the former McConnell Lakes Plan Area. However, direction from the land use plan was incorporated into the EMA prescriptions with little modification. Thus, many of the EMA management directions are outmoded, and the following recommendation is provided:

Recommendation # 16

The MNR, in consultation with relevant stakeholders, should review and update the land use direction (as specified in Table FMP-7 of the 2004 FMP) for the four EMAs in the McConnell Lakes Area - e122r, e133n, e135n and e132a – to consider more contemporary management goals and values.

3.3.7 Operational Planning

Harvesting

The translation of the SFMM output into the operational plan experienced some issues because the Company tried to do an initial reconnaissance of as many of the allocated stands as possible before they were included in the draft plan. Due to the timing of the plan development, and the amount of person power required to reconnoitre sites, the Company was obliged to estimate which stands would be allocated by the model. It turned out that the stands allocated by the model tended to be older than those the Company expected that it would harvest. As a result, the Company ended up allocating between 5 and 15% of the area by forest unit to stands that were younger than the minimum age of eligibility, as defined within the selected management alternative. This is, in the view of the Audit Team, an acceptable price to pay for ensuring that the stands that were allocated in the FMP were feasible to harvest. In future plans, the Company expects to have a better inventory, especially where stands have recently been entered, and to be able to use the year 6-15 analysis from the 2004 FMP to help identify which stands are likely to be allocated in the 2009 FMP.

The planned annual harvest volume, at 762,000 m3, is about 7% less than the harvest volume of 812,000 m3/yr projected in the SFMM analysis. Reasons for the difference include insufficient supply of some timber types (e.g. insufficient white birch sawlog volume to meet commitments), and substitution effects of younger stands to replace older stands allocated in SFMM. Issues that the planning team had with the application of the NDPEG were reviewed above.

Silvicultural Ground Rules

The SGRs contained in the 2004 FMP were consistent with the Silvicultural Guides that were in effect at the time. All the required elements were included and the preferred prescriptions for each forest unit were appropriate, and were consistent with the selected management alternative. The silviculture prescriptions in the 2004 FMP were more focused than in the 1999-2004 FMP, where essentially every possible alternative contained in the Silvicultural Guides was listed for each forest unit. NFRM made use of their historical free-to-grow and silvicultural effectiveness monitoring information in developing the preferred SGRs. NFRM promotes and supports a wide range of forest research activities within the Nipissing Forest, principally with the Forest Research Partnership (a partnership among Tembec Industries Inc., the MNR, the Canadian Forest Service and the Canadian Ecology Centre), but also with universities and other agencies, and the insights gained from this involvement was apparent in the revisions that had been made to the SGRs from the previous plan. In general the silvicultural strategies were thoughtful and well rationalized.

One exception was noted in the silvicultural ground rules, for full-tree harvesting in Shelterwood Regeneration Cuts. The previous IFA recommended that monitoring of exceptions to the silvicultural guides should be reported in annual reports. This condition was met by NFRM as described in Table 16. Exceptions monitoring is discussed further in Section 3.6.

Forecasts for renewal and renewal support activities in the 2004-2009 FMP were reasonable and were consistent with the selected management alternative. Renewal activities were planned for 57,972 ha, or 109% of the planned harvest area. The renewal forecast is higher than the harvest forecast due to areas harvested in the previous term, where silvicultural activities are scheduled to be carried out in the current term, as well as the planned stand improvement activities.

Wildlife Habitat

The key topic identified in the following paragraphs (acceptable projected bounds for wildlife habitat) has been identified in several previous audits. As the concern is relevant for this audit, the topic is addressed here, even though it has already been identified through recommendations directed at corporate MNR in audits of other SFLs.

An important part of the forest state modelling which occurs as part of the planning process is the prediction of the habitat status for many indicator wildlife species. Consistent with direction from the MNR, the habitat status of 18 wildlife species was tracked over the course of SFMM simulations (Although 18 species were tracked, 21 indicators were produced as for three species two separate indicators were produced – black bear foraging and black bear fall/winter habitat were tracked separately, as were white tailed deer foraging habitat and white-tailed deer winter habitat, and moose foraging habitat and moose winter habitat.) Also consistent with MNR direction, it is deemed acceptable if the predicted habitat available for a species does not fall below an amount which is less than 20% below the minimum level recorded at any time during the SFMM benchmark run[13]. So, for example, say that in the SFMM 100-year benchmark run, the area of habitat for species X reaches a minimum of 1,000 ha; it is then deemed sustainable if the habitat area for that species remains above 800 ha (20% less than 1,000). (Habitat levels are sometimes permitted to cross below the -20% level for brief periods of time prior to the DFFC, without concerns regarding sustainability being raised.)

For the Nipissing Forest, habitat predictions for the wildlife species stayed within the MNR-mandated bounds with only relatively minor exceptions (Black bear fall habitat fell below the –20% mark for one of the 11 ten-year intervals periods between the present, and the year 2104; broad-winged hawk and northern flying squirrel habitat both fell below for two time periods). However, for 11 of the 21 indicators, the amount of habitat available at the time of the DFFC, is predicted to be less than at any time during the SFMM null run (but more than the –20% deemed as acceptable). For some species, there is less habitat predicted to be available than the minimum encountered during the null run for almost all of the 11 time periods included in the simulation. Species with less habitat available in 9 or 10 of the 11 time intervals include barred owl, black bear (summer and fall), least flycatcher, red-shouldered hawk, broad-winged hawk, and eastern red-backed salamander. The trend is perhaps particularly noteworthy for the red-shouldered hawk, as this is classified as a "species of concern" by both the MNR and Environment Canada's Committee on the Status of Endangered Wildlife in Canada. While projected habitat levels for the red-shouldered hawk do not plunge precipitously, the trend in habitat which is deemed acceptable for this species is counter to that which would portray sincere attempts to manage a species at risk.

Several species are projected to suffer precipitous habitat declines. Over the course of time and forest management, it is reasonable that habitat levels will change and that habitat for some species will decline, while it increases for others. However, the species which suffer the most precipitous declines on the Nipissing Forest include those which have been identified as indicator species by the MNR and those for which management guides exist. Marten habitat is projected to decline an average of 28% over, reaching a maximum of 38% decline in 2064. Moose winter habitat is projected to decline an average of 32%, reaching a maximum decline of 43% in 2074. Pileated woodpecker habitat is projected to decline an average of 33%, reaching a maximum decline of 42% in 2064, and white-tailed deer winter habitat is projected to decline an average of 20%, reaching a maximum decline of 26% in 2034.

The predicted changes in wildlife habitat raise some concerns; first is the fact that the trends are sharply declining for some of the Forest's flagship species. Second, the Audit Team is concerned that the bounds of acceptable change (which permits declines of up to 20% below the minimum encountered during the benchmark run) are too broad. The situation on the Nipissing Forest illustrates this well. For the 2004 plan, habitat levels at the time of the DFFC for approximately half of the selected species are predicted to fall below levels predicted at any point of the 100 year benchmark run.

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[13] The benchmark run is run to identify the state of the forest in the absence of fire suppression and timber management.

Although the DFFC is a long time in the future, the management actions taken now will obviously affect the forest condition then. Furthermore, management actions predicated on the acceptability of such declines in wildlife habitat will limit options for wildlife habitat management in the not-so-distant future related as well.

We note that the Company has complied with the direction provided by MNR, but we feel the MNR's direction on this topic needs considerable refinement and have addressed this in Recommendation # 17

Recommendation # 17

Corporate MNR should revise the direction provided to planning teams which permits broad and extensive declines in wildlife habitat and habitat levels to fall below those predicted to occur in the SFMM benchmark runs.

We also note that this is an instance where more realistic assumptions regarding the actual harvest would be helpful. Table FMP-12 shows that the tourism weighted management alternative provided some 10 to 20% more habitat in 2104 than did the selected management alternative for key species listed above, including marten, moose (winter), and pileated woodpecker. Following Recommendation # 10 and Recommendation # 11 would provide a more realistic assessment of habitat trends on the Forest.

Fisheries Information

The 2001 IFA for the Nipissing Forest drew attention to the fact that the most of the waterbodies on the Forest have not been systematically surveyed and so their status (as coldwater, coolwater, or warmwater) is not known. This issue still exists for the Forest. For circumstances in which a waterbody's status is not known, it is dealt with using a precautionary principle. This means that such waterbodies are afforded the protection associated with the cold waterbodies for harvesting, so they have a reserve applied in situations where one is not required for warmwater bodies. Use of the precautionary approach eliminates the possibility of harvesting near to the shore of these lakes, rivers, and streams. Not only does this prohibition cost the company harvesting opportunities, it impacts the development of deciduous habitats close to shore. Lack of cutting close to shore frequently results in coniferous "doughnuts" around waterbodies, which provide poor habitat for aquatic mammals and therefore also limits trapping opportunities.

The previous IFA identified two recommendations toward this situation. The first (Recommendation # 4) directed the MNR to commit to conducting fish and wildlife surveys in support of forest management for the 2004 FMP, and the second (Recommendation # 5) directed the MNR to conduct appropriate fish and wildlife surveys throughout the implementation of the 1999 FMP. In response to these recommendations several action items were identified in the action plan addressing the audit's findings. These included:

- "identify funding for non-timber values in the FMP Terms of Reference..."
- " The provincial Fish and Wildlife Leadership team will be asked to consider allocating funds annually for values updating;
- "A proposed warm water and cold water data collection protocol will be tested

- "Continue to submit for funding of non-timber values updating…"

Through discussions with MNR staff it is apparent that the majority of the effort has been devoted to developing a protocol which will allow for stream classification based on temperature profiles and other physiographic information (rather than on data derived directly from fish surveys). While this is clearly a worthwhile effort, it is striking that in the five-years since the last IFA, the situation, in terms of the proportion of streams whose status is known has not changed appreciably. Effort devoted to developing the protocol has progressed somewhat haltingly due to MNR staff workload and funding issues. Recommendation # 18 directs corporate MNR to allocate sufficient funding so that the task of completing water body classification can be completed by the time of the next IFA. The Audit Team believes that the issue of lack of progress in deriving water body status information ultimately comes back to MNR funding and staffing decisions and is not reflective of the abilities or desires of existing MNR staff.

Recommendation # 18

Corporate MNR should allocate sufficient resources to the task of completing waterbody classification for the Nipissing Forest can be completed by the time of the next Independent Forest Audit.

Another values topic identified in the previous IFA was the relatively paucity of surveys of moose aquatic feeding areas (MAFAs). In recent years, the MNR has surveyed the projected harvest allocations on an annual basis, allowing appropriate protection to be applied to MAFAs. In addition, the updated survey information has facilitated the development of refined MAFA prescriptions, making for improved and refined AOC prescriptions.

Area of Concern Prescriptions

The 2000 FMP contained almost 80 unique prescriptions for Areas of Concern, about half of which were related to recreational aspects of the Forest (e.g. ski trails, tourism lakes, boat caches, portage routes). Many of the prescriptions were complex, but the Audit Team felt that they were appropriate, given the many uses of the Forest and the mechanisms through which values are to be safeguarded. The Audit Team found that the prescriptions were thorough and covered all the important values in the forest

Although there were some minor compliance transgressions regarding the AOCs, such occurrences were uncommon and the Audit Team found the implementation was generally good.

Natural Disturbance Pattern Emulation Guidelines

The application of NDPEG proved to be troublesome for the Company in a number of ways.

An objective on the Nipissing Forest is to restore red and white pine to levels that are more in line with those in the historical forest. This will chiefly be done by raising the pine content of intolerant and mixedwood stands now on former pine sites. The standard NDPEG requirements for islands and peninsulas are high in these forest units (total leave areas are 30 – 34%) and hinder the achievement of restoration goals.

However, the NDPEG notes that the guidelines can be modified to align them with specific needs, which gives rise to the following recommendation.

Recommendation # 19

The MNR and Company should adapt their application of the residual timber requirements of NDPEG so that they are more consistent with restoration efforts.

The audit team believes that it would be appropriate for the Company and MNR to implement changes to the application of NDPEG on restoration sites as soon as the adjustments have been determined.

A second difficulty encountered by the Company in the application of NDPEG was that the initial runs of the wood supply analysis found very large reductions in the planned harvest of intolerant hardwoods (e.g. 42% in the case of poplar) as a result of applying the guide direction. The planning team quickly recognized that the guide did not provide sufficient direction regarding calculation methodologies when adjacent stands of different forest units were combined in a block or were considered to be part of a single cutover. A series of adjustments were made based on interspersion of forest units, inclusion of AOCs and by-pass, and the assumption that peninsulas can be partially harvested in future.

Another aspect of the application problems resulted from direction that insular patches and peninsulas be left provide biological structure. Although the guide does not require that insular and peninsular patches be permanently removed it is implied by the rules that are used to simulate the application of NDPEG within SFMM. Not only does this assume that all insular patches and peninsulas will be operable, which is not necessarily the case, but it also appears to run counter to the intent of the guide, at least in the opinion of the Audit Team. After these adjustments, the planned harvest of poplar was reduced by 19% as a result of applying NDPEG, which is substantial but perhaps within the bounds of expectations.

The Landscape Guide, now being developed, is expected to be available for use in 2010. NFRM has volunteered to test the Landscape Guide ahead of its scheduled broader availability to help address issues such as these. The Audit Team observes that the NDPEG is designed primarily from a boreal forest perspective, and there are difficulties in applying the rules to the Great Lakes St. Lawrence Forest. It is hoped that the Landscape Guide will not be encumbered by the same perspective.

Recommendation # 20

Corporate MNR should make strong efforts to ensure that the forest management direction incorporated into the Landscape Guide is compatible with conditions in the Great Lakes – St. Lawrence forest.

Crown and Patent Land Ownership Information

Interviews conducted and information reviewed by the auditors indicated that the MNR's geographic data related to Crown and Patented land ownership is unreliable despite the efforts of MNR staff to improve the data. The data are contained in a layer of the MNR's mapping database. These problems are occurring elsewhere in the province too, but are more prevalent in areas like the Nipissing Forest, where there is considerable interspersion of private and Crown land.

Inaccurate boundary data has led to instances in which private land has been mistakenly scheduled for harvest because it was portrayed as Crown land (e.g. Grant Block #77 along the Sand Dam Road in Merrick Township was approved for harvest in 2004 FMP was found to be private land held by the City of North Bay). There were also issues with the depiction of the Algonquin Park boundary that forms a boundary for the Nipissing Forest, that affected harvest blocks that were located along the boundary.

Land ownership information is stored within the Ministry's Natural Resource Values Information System (NRVIS). The Ontario Surveyor General's office updates the ownership layer and provides it to the MNR and NFRM. Changes to land ownership can often take months to appear in the updated ownership databases. There is currently no verification of the ownership data and there is no follow-up to determine the causes of any ownership errors.

The main ownership issues appear to be: mislabelling of lots (i.e. identified as Crown, when it really is private); and inconsistencies in the location of lots between the digital ownership layer and survey markings on the ground. Reasons for ownership layer variances are primarily due to:

- sale or transfer of private or Crown land;
- delays in registering the changes in ownership into the land ownership layer;
- errors in entry of digital ownership boundaries;
- lack of quality control in verifying data; and
- inconsistencies in the old technology used for mapping the original land surveys versus new digital GIS technology used for mapping.

North Bay MNR staff have worked to correct ownership layer errors. In 2004-05 a lands technician reviewed the ownership layer data and flagged a total of 14 or 15 ownership errors for North Bay District. MNR district and NFRM staff continue to find errors as they work with the digital map products.

Ultimately the MNR is responsible for providing the accurate ownership boundary to the SFL holder. SFL holders are responsible for knowing the location of the correct private land boundary as well as marking the boundary of the cut. NFRM has developed and is implementing a standard operating procedure which includes a verification of the land ownership prior to operations and landowner review of the marked limit of forest operations.

The auditors are very concerned that the ownership layer issues and errors could lead to liability to MNR and NFRM should private land be inadvertently harvested. Ownership layer problems could also lead to delays in the 2009 FMP development as has occurred on other forests. In late 2004, NFRM wrote to the director of MNR's Industry Relations Branch and the Ontario's Surveyor General outlining its concerns regarding the accuracy of the ownership information provided by MNR.

MNR responded to NFRM by identifying that the Ontario Parcel and the Township Improvement Projects will help improve the quality of the ownership mapping layers provided to the SFL by the MNR. While this effort should help resolve the situation, the Audit Team has identified the following recommendation to help ensure that the situation is addressed prior to the development of the next FMP.

Recommendation # 21

Corporate MNR should continue its efforts to eliminate errors in the Crown and Patent Land Ownership layers and ensure that development of the 2009 FMP is not affected. In addition, corporate MNR should clarify, who is responsible for the maintenance and accuracy of the land ownership information, and should develop an updating procedure that allows for the timely updates to the ownership information.

3.3.8 Plan Review and Approval

The public consultation for the 2004 FMP consisted of five formal consultation opportunities consistent with the requirements of the 1996 FMPM. These were invitation to participate, first information centre, second information centre, draft plan review, and MNR approved plan inspection. The planning team exceeded the public consultation requirements by providing public field tours and a questionnaire at the first information centre stage, by having an additional field tour at the second information centre stage and by holding supplementary open houses at the draft plan stage. A separate native consultation was not conducted since none of the five First Nations chose to have this separate process. However, all five First Nations had membership on the planning team.

Table 6 provides a comparison of the planned versus actual FMP development and public consultation schedule for the 2004 FMP. It shows that the invitation to participate and first information centre were held on time. However, the second information centre was delayed by two months and the draft plan submission on September 24, 2003 was five months later than planned as the planning team struggled with the NDPEG guideline implementation and the demanding planning process.

The MNR review was delayed by four months and took about 60 days (from September 24, 2003 and November 24, 2004) to complete meeting the review schedule identified in the 1996 FMPM. There were 75 pages of required alterations in the preliminary list available on January 28, 2004, and 117 pages of alterations with the final list, provided on March 9, 2004. It is apparent that NFRM and MNR worked closely to address the required alterations, and during the last public review period to avoid delays in plan approval and operations. In fact NFRM noted that they appreciated the efforts of the District MNR in reviewing the draft and final FMP versions and providing required alterations as the review progressed, which allowed NFRM to work efficiently in preparing the final version of the plan.

The final plan was submitted on March 12, 2004, which was four months after the planned schedule.

The final FMP was approved on March 29, 2004 and the 2004-05 AWS was approved on April 14, 2004 and the FMP 30 day and AWS 15 day inspection periods were overlapped to allow operations to proceed on April 29, 2004. Therefore, the final plan approval was four months later than planned leading to a one month delay in operations.

Table 6. Summary of the development and public consultation schedules for the 2004 FMP. (From Final Plan Summary and Terms of Reference, EBR Registry #PB02E2005)

Public Consultation Stage	ToR Schedule	Date Completed	Comments
Terms of Reference Submitted	22-Feb-02	25-Feb-02	
Terms of Reference Approved	na	08-Jul-02	approved by DM Feb 28, 2002, RD July 8, 2002
1) Invitation to Participate			
invitation to participate	31-Mar-02	29-Mar-02	
EBR registry	31-Mar-02	15-May-02	
separate native consultation	31-Mar-02	na	not utilized
2) First Information Centre			
30 day advance public notice	18-Sep-02	19-Sep-02	
information centers	23-30-Oct-02	19-26 Oct-02	
Native Community Meeting	23-30-Oct-02	na	not utilized
60 day public response	30-Dec-02	27-Dec-02	
3) Second Information Centre			
30 day advance public notice	03-Jan-03	4-27 Mar-03	
Revised EBR Notice	na	17-Mar-03	notice revised 2nd info. centre date
information centers - Mattawa	10-14-Feb-03	08-10-Apr-03	
native consultation forum	10-14-Feb-03	na	not utilized
60 day public response	16-Apr-03	09-Jun-03	
4) Draft Plan Review and Issue Resolution			
draft submission	01-May-03	24-Sep-03	
notice of draft plan review	30-Jun-03	24-Oct-03	
EBR Registry	01-Aug-03	24-Nov-03	
information centers - North Bay	na	26-Nov & 09-Dec-03	
native communication forum	01-Aug-03	na	not utilized
MNR preliminary alterations	01-Aug-03	24-Nov-03	
60 day public review response	01-Oct-03	24-Dec-04	
final required alterations	16-Oct-03	09-Mar-04	
5) Plan Approval			
final plan submission	17-Nov-03	12-Mar-04	
15 day MNR final review	30 Nov to Dec 14-04	12 to 27-Mar-04	
MNR approval of plan	29-Nov-03	29-Mar-04	
approved plan inspection notice	29-Nov-03	21 to 24-Mar-04	
EBR Registry	22-Nov-03	unknown	
30 day approved plan inspection period	30 Nov to Dec 29-04	Mar 30-Apr 28-04	
last opportunity for bump-up	29-Dec-04	28-Apr-04	
45 day MOEE bump-up review ends	15-Jan-04	07-Jun-04	
2004-05 AWS approved	15-Mar-04	14-Apr-04	
15 day AWS public inspection period	15-30-Mar-04	14-29-Apr-04	
operations commence	01-Apr-04	29-Apr-04	

Licence Approval Dates

The 2004 FMP was approved for operations on April 29, 2004, which was a delay of approximately one month over the normal operational start date of April 1. We attempted to verify when operations actually started by reviewing a TREES summary of the licence approvals. Many operators' approvals had "issue dates" and "effective dates" prior to April 29, 2004. MNR staff explained that because there are so many licensees on the forest it requires considerable effort to organize and administer approvals, and so licences are prepared in advance of the intended commencement date to ensure that there are no administrative-related delays in operations commencement. This is logical. MNR staff explained that the "issue dates" and "effective dates" were automatically entered when the licences were prepared. Unfortunately, this means that the licences issued to operators approved operations prior to the FMP's approval date. The Audit Team was not provided information verifying that operations did not actually commence prior to April 29, 2004.

Suggestion # 6

MNR and NFRM should maintain records that clearly indicate when operations commence each year.

3.3.9 Plan Amendments and AWS Revisions

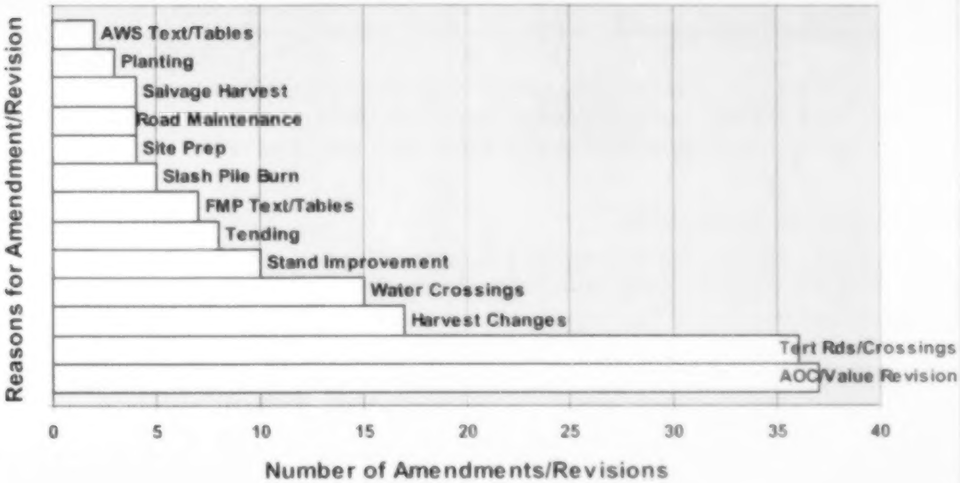
MNR and NFRM track amendments and AWS revisions together so this audit report does the same. Overall the amendments are very well organized, documented and classified. All three minor amendments during the audit period were forwarded to the appropriate government offices to keep their versions of the plans current.

Figure 5 provides a summary of the reasons for the amendments or revisions. Most of the revisions were associated with tertiary road planning and the addition of values. Given that the 2004 FMPM no longer requires that AOC additions be treated as FMP amendments, the number of amendments should decrease in the future.

There were no major amendments, four minor amendments, 80 administrative amendments, and 65 AWS revisions over the audit period. A total of 15 amendments or AWS revision requests were denied, cancelled or put on hold. There were an average of 33 amendment or revision requests per year with an average of 17 amendments and 12 AWS revisions approved. The fact that almost all changes are administrative amendments or AWS revisions reflects well on the quality of the original FMPs, and on the efforts to keep them and the AWSs up-to-date based on revised operational needs.

The review and approval timelines averaged 60 days for minor amendments, 27 days for administrative amendments, 14 days for AWS revisions reflecting reasonable review and approval timelines. The auditors were comforted to see that several changes were denied indicating that serious consideration is given to all amendments or revisions and they are not just rubber stamped. Overall, the auditors found the amendments to be appropriately classified allowing for an appropriate level of public consultation.

Figure 5. Reasons for FMP amendments and AWS revisions during the audit period.



As described earlier (Section 3.2.4) we found incomplete records of public consultation in the company's records of amendments and annual work schedules. Recommendation # 6 addresses need for the company to keep complete records of public consultation responses.

3.3.10 Contingency Plans

There were no contingency plans during the audit period.

3.3.11 Annual Work Schedules

NFRM prepared and implemented five Annual Work Schedules during the audit term. The first four AWSs were prepared under the direction of the 1996 FMPM, while the last was prepared under the 2004 FMPM. The 2004-05 AWS was not approved for implementation until April 29, 2004 (approximately 1 month late) due to a delay in the 2004 FMP approval. The four other AWSs were approved for implementation on schedule, starting on April 1 of the appropriate year. All AWS's included the proper approval page and were certified by the NFRM planning forester.

According to the FMPM, the deadline for submitting draft AWSs is December 31 each year. This is to be followed by a 30 day MNR review period, and final approval is required by March 16 to allow 15 days for the public to inspect the approved AWS prior to operations commencing on April 1st.

Although draft submission dates were not readily determinable (because they had not been recorded by either the company or the MNR), it appears that NFRM met the AWS submission deadlines based on the final submission dates and the on-time approval of all AWSs during the period. NFRM typically submits well-written and comprehensive AWSs, which meet all of the elements required. MNR's comprehensive review of the AWS typically resulted in mainly operationally-based revisions to planned roads and harvesting prescriptions or revisions to values and AOC prescriptions. Overall, there is an excellent effort made by both NFRM and MNR to develop, approve, and implement good quality AWSs on time.

Annual compliance plans and fire plans were also submitted and approved as part of the AWS. Typically the slash pile burning and spray plans were submitted after the AWS approval and were appended into the AWS, as is permitted under the FMPM.

Silvicultural Aspects

The AWSs included a good overview of each operator's operating blocks. The renewal, tending and protection, and renewal support sections provide a good overview of all operations planned for the year.

The Forest Operations Prescriptions (FOPs) contained in the AWS were found to be consistent with the SGRs contained in the respective FMPs. All operations we reviewed were conducted in accordance with the approved AWS. Revisions to the AWS for silvicultural operations were conducted as required.

Annual Operations Included in AWSs

The Audit Team is concerned that the amount of annual operations included in the AWSs has been substantially higher that the annual level actually achieved or the amount anticipated to be achieved. To illustrate this, Table 7 shows the harvest levels planned in the FMP in comparison with those included in the 04/05 and 05/06 AWSs. The table clearly shows that the allocations identified in the AWSs far exceed the amounts harvested and which can practically be harvested. For example, the 2004/05 AWS included a planned allocation of 3,598 ha of the Mixedwood (Mw) forest unit. Of this amount, only 420 ha, or 12% of the amount identified in the AWS was actually harvested during the year. The 2005/06 AWS identifies an allocation of 4708 ha of this forest unit, or 77% of the allocation for the entire five-year term of the FMP. The main reasons given in the 2005-06 AWS for using this approach is related to the large number of operators who needed operational flexibility in case of inclement weather, uncertain markets, and the need to develop advance access into new blocks.

The 2004 FMP allocated a total of 53,022 ha for harvest. The 2004-05 AWS allocated 29,902 ha or 56% of the FMP planned harvest area, however only 4,161 ha were actually utilized. The 2005-06 AWS allocated a total of 37,349 ha of harvest area or 70% of the 2004 FMP representing about 3.5 years worth of harvest.

Table 7. FMP Harvest Levels Compared to AWS Harvest Levels and actual achievements

FU	FMP Planned	2004-05 AWS Planned	2004-05 AR Actual	% 2004-05 AWS Utilized	2005-06 AWS Planned	% of FMP allocations in 2005-06 AWS	# Yrs allocation based on FMP levels
Pwst	2,592	1,017	87	9%	1,377	53%	2.7
Pr	617	161	2	1%	520	84%	4.2
Pj	887	372	143	38%	423	48%	2.4
Po	2,085	1,482	281	19%	1,884	90%	4.5
Bw	4,890	3,802	559	15%	4,328	89%	4.4
Mcl	671	387	20	5%	403	60%	3.0
Pjsb	2,112	1,060	146	14%	1,862	88%	4.4
Sf	4,299	2,141	178	8%	2,363	55%	2.7
Mw	6,075	3,598	420	12%	4,708	77%	3.9
Pwus	8,887	4,823	1,509	31%	4,478	50%	2.5
He	650	186	0	0%	517	80%	4.0
Lwmx	1,173	832	14	2%	949	81%	4.0
Hdus	4,183	2,846	309	11%	3,298	79%	3.9
By	1,283	663	28	4%	1,068	83%	4.2
Hdsel	12,618	6,532	465	7%	9,171	73%	3.6
Total	53,022	29,902	4,161	14%	37,349	70%	3.5

Although the advantages of this strategy to NFRM staff are clear, such large AWS harvest allocations (relative to the FMP five-year AHA) are well in excess of provincial norms. Even in the most trying times, it would be difficult to argue that this level of operational flexibility is required to deal with operational uncertainty.

Excessively large AWS harvest allocations result in greater workload for MNR staff who are required to check the area approved in the plan and ensure that proper notifications are provided to mining claim holders, tourism operators, and any other organizations or individuals who may be affected by scheduled operations. The uncertainty associated with repeated notification and delay of operations can also create difficulties for other forest users. Both MNR and industry lose public credibility when notification is provided, for several years consecutively, without operations actually taking place.

To maintain confidence in both the utility and reliability of the AWS, the Audit Team believes that NFRM should reduce the size of future AWS harvest allocations in comparison to the average annual rate of forecast depletion in the FMP.

Recommendation # 22

NFRM should reduce the size of future AWS harvest allocations in comparison to the average annual rate of depletion forecast in the FMP. This should be done in consultation with District and Regional MNR to determine acceptable ranges.

Phase-in Requirements

The 2005/06 AWS adequately incorporated most of the phase-in provisions identified in the 2004 FMPM. However, one inadequacy was that water crossings were identified only for 2005-06 and not for the next year, as is newly required under the 2004 FMPM. NFRM was unable to meet this requirement when the AWS was prepared and instead submitted the second year water crossings in October 2006. Two years of water crossings were planned for in the subsequent 2006-07 AWS, so the problem was resolved.

Another aspect of the 2004 FMPM which was not fully addressed in the AWS deals with the new classification of access roads (see Section 3.4.6 of this report for information on road classification). Implicit in one of the phase-in requirements for AWSs is the use of the revised road classification system. However, the roads on the Nipissing Forest have not yet been classified into the new primary (i.e. main roads), branch (i.e. between harvest blocks) and operational (i.e. within harvest blocks) categories of the 2004 FMPM, since the 2004 FMP defined the roads under the old term of use definitions: primary (i.e. >15yrs use), secondary (i.e. 5 to 15 yrs use), tertiary (i.e. <15 yrs use). Therefore in the 2005/06 AWS, the roads were translated into the new definitions where, secondary roads were deemed to be equivalent to branch roads and tertiary roads were deemed to be equivalent to operational roads. This approach seems reasonable. NFRM have indicated they would re-classify all roads as part of the 2009 FMP.

The new Forest Operations Prescription (FOP) requirements of the 2004 FMPM were to be phased in as of June 2004, so the new FOPs were applied to portions of the 2004-05 AWS and the entire 2005-06 AWS. NFRM has revised their information system to support the preparation of FOPs for AWS in a format compliant with the requirements of the 2004 FMPM. All FOPs contained in the 2005/06 were prepared using this format.

3.4 PLAN IMPLEMENTATION

3.4.1 Areas of Concern

The IFAPP directs auditors to examine whether AOC protection measures were implemented as in the approved prescriptions, and that the prescriptions were suited to the specific site conditions.

Field inspection of AOCs revealed uniformly appropriate AOC prescriptions. The use of the precautionary approach for dealing with unclassified waterbodies was apparent in a some of the AOCs viewed, however given this, the implemented prescription on the ground was consistent with the prescription identified in the AOC documentation. A couple of previously identified minor trespasses of AOCs were viewed, but no systemic issue of this sort was apparent.

3.4.2 Harvest

The audit team viewed a wide range of actual harvest operations that had been conducted during the audit period. These included selection harvesting, shelterwood, clearcutting, and stand improvement/ thinning. The audit team was also careful to select sites that had been harvested by a wide variety of the various operators, including shareholder companies and contractors. The calibre of the operations was high – snag retention, utilization of timber on harvest blocks, and adherence to boundaries were very good.

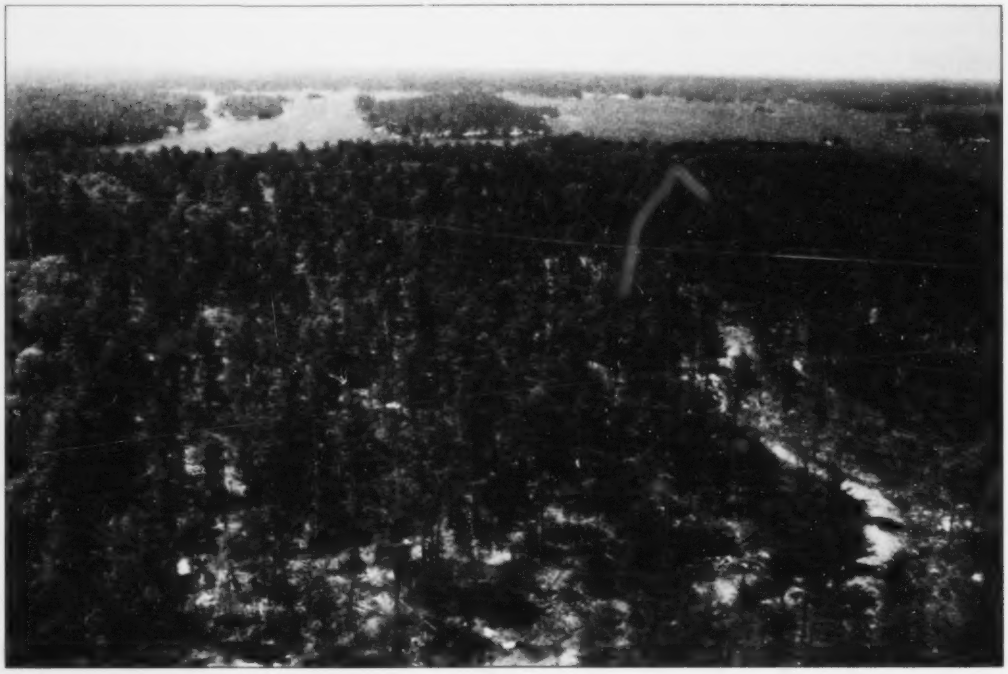


Figure 6. Aerial view of shelterwood seed cut.

The previous IFA included a recommendation to improve the management of hardwood slash – the audit team noted that slash piling was usually good but in some places it was lacking or of sub-standard quality and could be improved.

Planned versus Actual Harvest Activity

As indicated above (section 2.2.3), the planned level of harvesting activity has been persistently much less than the planned level. This situation continued during the audit period. For the 1999 FMP period, the last three years of which were part of the audit period, the actual harvest area was 51% of planned. The low level of actual achievement has continued into early part of the 2004 FMP period – in the each of the 2004-05 and 2005-06 fiscal years[14], 39% of the average planned harvest area was actually cut (i.e. at the end of year 2, 16% of the five-year planned harvest was cut).

The proportion of planned harvesting that did take place was greatest in the mixed conifer uniform shelterwood (74%), white pine uniform shelterwood (68% of the planned harvest was achieved during the 1999 FMP period), and boreal conifer (60%), while it was least in the hardwood – hemlock uniform shelterwood (29%), lowland conifer clearcut (32%) and hardwood uniform shelterwood (34%) forest units.[15]

A similar pattern of harvest intensity in the various forest units was evident in the first year of activity in the 2004 FMP.

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[14] The Company provided the audit team with a preliminary estimate of the total harvest area, 4050 ha, in 2005-06.

[15] Actual harvests greater than 100% of planned were achieved during the 1999 FMP period in two minor forest units as a result of amendments increasing the allocated area.

The overall comparison of planned versus actual harvest volume yields similar levels of achievement. A total of 56% of the planned harvest volume was realized during the 1999 FMP period. However, the actual harvest volume of red pine was 175% of the planned level, while white pine volume was 118% of planned. The Trend Analysis (Appendix A) indicates that past estimates of pine yields were too low and they were increased in the 1999 FMP – the high level of volume achieved relative to planned suggests that the figures in the 1999 FMP were still low; they were adjusted further in the 2004 FMP. Spruce volume was 86% of planned, and the total softwood volume obtained was 76% of planned. In contrast, only 43% of the planned hardwood harvest volume was obtained. Tolerant hardwood volume was closest to the anticipated level (55%), while poplar (42%) and white birch (36%) were relatively low.

The annual report provided information about the area harvested by operator type until 2003-04, when the report format changed.[16] Three classes of operator were identified – shareholders, independents and fuelwood operators, and First Nations. During the 1999 FMP period, the First Nations operators harvested 52% of their planned allocation, shareholders harvested 51%, and independents harvested 69%.

Utilization

In this context, utilization refers to the extent to which the available harvest (as measured by the planned harvest volume) is actually captured. A more detailed examination of the matter reveals a fairly complex pattern – the analysis of the Utilization Task Force, which was struck in response to a recommendation in the previous IFA, provides considerable insight.

The task force reviewed the planned and actual usage of each component of the harvest, breaking out veneer, sawlogs, and pulpwood for key species. Veneer bolts and sawlogs were found to be in demand, and a greater volume of these products would be utilized if it was available.

For example, the planned white birch veneer harvest is 10,000 m3/yr, but the current use is 2,000 m3/yr. There is a wood supply commitment to Columbia for 8,900 m3/yr of hardwood veneer (which includes tolerant hardwood veneer) that has not been met. The issue is not a lack of physical supply in the forest, but rather that poor markets for white birch pulp markets prevented profitable entry into many of the stands that were allocated.

This shows up most clearly in the figures for white birch pulpwood: In the 1999 FMP period, the average planned white birch pulpwood harvest volume was 117,234 m3/yr but only 33% or 39,200 m3/yr was harvested. There were two commitments for low-quality birch that were not met in the years that the Task team was meeting – one to Tembec for 46,000 m3/yr, and a new commitment to Precut Hardwood for 16,000 m3/yr. (For a discussion of wood supply commitments during the audit period, see section 3.8.4)

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[16] It is noted that Table AR-4, which is provided by MNR, includes a column for harvest area that was not completed in the 2004-05 AR.

The relatively old condition of the birch in the forest means that the future harvest is expected to decline in the 2004 FMP period, when the forecast pulpwood volume will be 79,000 m3/yr, and it is estimated that 3,000 m3/yr of veneer will be produced.

Soil Disturbance

The 2001 IFA recommended that NFRM implement measures to reduce the amount of rutting resulting from harvesting operations on the Nipissing Forest. The amount of soil disturbance (rutting, compaction, and erosion) resulting from harvesting and site preparation operations that we observed during the field assessments appeared to be minimal over the entire forest, and showed considerable improvement over the previous IFA assessment. In collaboration with the Forest Research Partnership, NFRM conducts a training program for its operators which focuses on the methods and rationale for minimizing undue soil disturbance, and undue logging damage to residual basal area and advance growth. A strategy to reduce site and stand damage is included in the 2004FMP, standard operating procedures for reducing site and stand damage are in place, and NFRM has adopted the soil disturbance standards from the Silvicultural Guide for the Great Lakes - St. Lawrence Conifer Forest in Ontario for compliance purposes.

3.4.3 Renewal

Overall, for the sites that were observed in the field during the audit, the silvicultural treatments were consistent with the silvicultural ground rules and forest operations prescriptions. The boundaries and coverage of site preparation, planting, and tending projects were good. The areas we reviewed in the field were well-matched to the areas mapped and reported in the ARs. The treatments were well-matched to actual site conditions and in most cases appeared to be effective in meeting the silvicultural objectives.

Several issues related to effectiveness of regeneration treatments, pertains to both clearcut and uniform shelterwood systems.

Natural Regeneration

On clearcut and shelterwood areas, NFRM's approach to mapping and reporting natural regeneration areas is first to identify untreated areas within harvest blocks. These areas are surveyed to determine their potential for natural regeneration, then are either reported as natural areas or scheduled for further treatment if necessary. We reviewed 1,555 ha of natural regeneration areas in the field. In general these areas were regenerating well (Figure 7). Many of the clearcut natural regeneration areas in coniferous forest units had significant amounts of residual trees and advance growth remaining after the harvest.

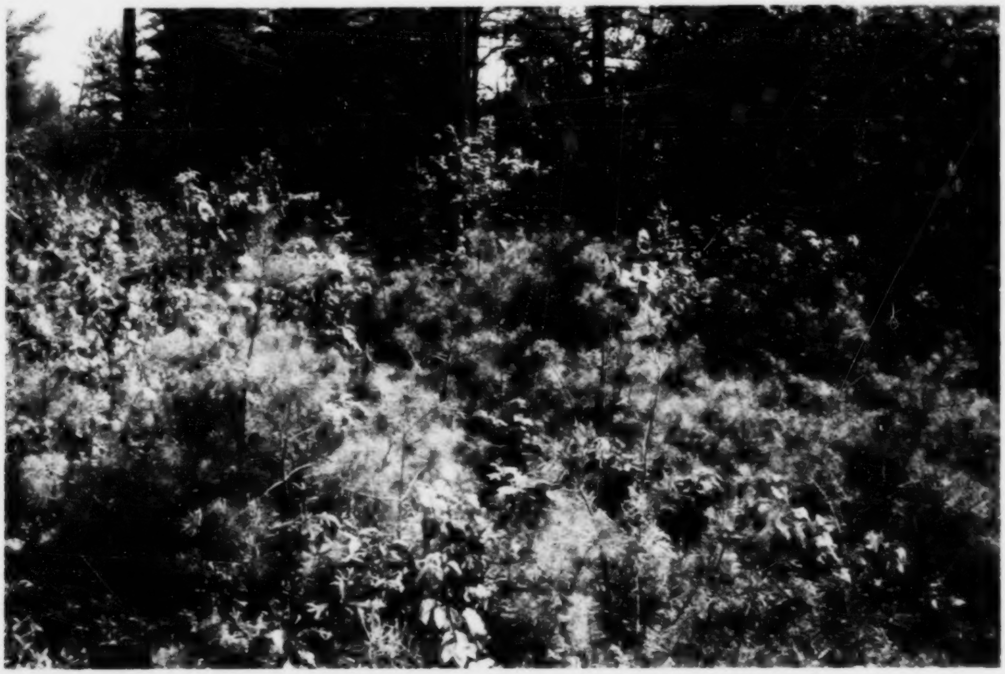

Figure 7. Excellent regeneration in a white pine shelterwood first removal cut.

Site Preparation

For the sites we reviewed in the field, the choices of site preparation treatments were appropriate for the site conditions, and the coverage and quality of the treatments was good. During the audit period, site preparation was conducted with a variety of equipment, including straight and angle blades and anchor chains. On shelterwood seed cut areas, site preparation is conducted to prepare seedbeds for coniferous regeneration, and/or planting sites. During the field assessment, we observed some sites where the site conditions indicated that site preparation would have been desirable. On similar sites, where site preparation had been conducted, we observed that the treatment appeared to increase the quantity and quantity of regeneration.

Recommendation # 23

Within one year, NFRM should develop means to better identify those forest units and site conditions where mechanical or chemical site preparation would enhance regeneration effectiveness, and direct the appropriate treatments to these sites.

Tree Planting

Species choices for tree planting were generally well-matched to the observed site conditions. NFRM has done a good job of directing species within planting projects to site-specific terrain. During the period from 2001 to 2004 (data for the year 2005 is not yet available), the Company planted approximately 6.7 million trees on the Nipissing Forest, consisting of white pine, red pine, white spruce, black spruce, red spruce, and red oak. The relative proportions of the species that were planted were appropriate for the forest units on the harvested area and were consistent with FMP objectives.

On a few sites we observed that the quality of planting stock, especially red pine and white spruce, appeared to be poor. Some of the stock was quite small and was growing poorly and experiencing mortality, especially on more competitive sites. Improper overwintering techniques by the growers were suggested as a possible cause. Drought conditions during the years in which the stock was planted may also have contributed to the problems. NFRM is aware of the problems with the stock and was planning to monitor its performance, and schedule remedial treatments where necessary. NFRM will also be working with the growers to correct the problem.

During the 1999-2004 FMP term, NFRM planted approximately 283,000 red spruce and 34,500 red oak as part of their efforts to maintain these uncommon species on the landscape. Performance of the red oak plantations that we observed was variable, and NFRM is considering other means, such as managing stump sprouts, for regenerating red oak.

NFRM did not conduct any direct seeding during the audit period, although 500 ha of area were planned as a contingency, principally for use in areas with limited access.

3.4.4 Tending and Protection

For the 1999-2004 FMP term, the tending program was implemented above the forecast level, with 111% of the total area forecast being achieved. This overachievement was due to the successful acquisition of funding to conduct a large program of even-aged commercial thinning in yellow birch, and uneven-aged stand improvement in low-quality tolerant hardwood stands.

The cleaning portion of the tending program, however, was underachieved, with 2,547 ha being treated, or 29% of the forecast level. The forecast of area to be treated is made based on past experience with the forest units to be treated, and surveys may reveal that the treatment is not required on a portion of or all of some sites. Underachievement of the projected harvest area for the past two FMP terms also has reduced the area available for treatment. As well, following shortfalls in the minimum balance for the Forest Renewal Trust in 2003 and 2004, part of the solution to rebuild the minimum balance was to defer a portion of the planned tending program to reduce silvicultural costs to a level consistent with the lower-than-expected revenues from harvesting.

The cleaning program consisted of approximately equal proportions of aerial and ground application of herbicides, and motor-mechanical cleaning. Motor-mechanical methods or ground applications for cleaning purposes are used near sensitive areas or where there are public concerns over aerial herbicide use. The cleaning treatments we observed in the field were of excellent quality. The treatments were appropriate for the site conditions and renewal treatments (i.e., were needed for competition control), were effective and showed good control of the application boundaries.

Despite the good quality of the cleaning treatments that we observed, during the field assessment we also noted several conifer plantations on high-competition sites that had not been tended (Figure 8). In these situations the growth of the planted stock was reduced and in some cases mortality was beginning to occur. Early tending appears to be critical to ensure regeneration success, especially with pine; competition on some sites had overwhelmed the planted stock and/or natural conifer regeneration. These sites will require cleaning treatments to maintain the conifer component and to ensure that the investment in tree planting is not lost.

We believe that monitoring of cleaning needs to be enhanced and better coordinated with silvicultural planning and implementation. NFRM has expressed the intent to address this issue, and the ideas we heard about how to address the issue were sound. To reinforce this need the following recommendation is made.

Recommendation # 24

Within one year, NFRM should assess the need for follow-up treatments on plantations that were established within the audit period. Sites identified as requiring cleaning should be prioritized, and scheduled for treatment as soon as practicable.

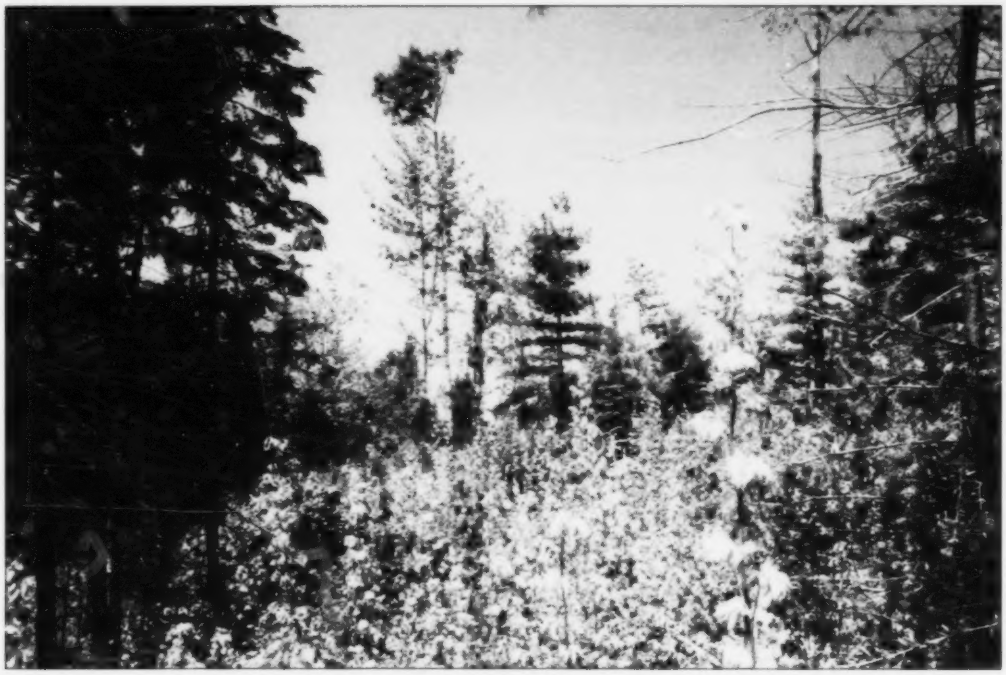

Figure 8. Poplar competition in a red pine plantation.

The pre-commercial thinning projects that we reviewed in the field, had been well-implemented according to the site-specific prescriptions, with acceptably low levels of damage to the residual trees and advance growth, and good density control. The stand condition and ages of the areas selected for thinning were also appropriate. The stand improvement activities conducted on low-quality hardwood stands had also been well done. Operating conditions are often difficult in these stands and the operators are to be commended for their good performance. The area completed for both these treatments considerably exceeded the forecast levels for the 1999-2004 FMP term, as mentioned previously.

For the uneven-aged stand improvement work, the operators made special efforts to cut unmerchantable material (down to 10 cm) to reduce diseased and defective unacceptable growing stock and promote natural regeneration of tolerant hardwoods. First Nation contractors completed stand improvement work as part of the Loring Deer Yard Tolerant Hardwood Stand Improvement Project. The objective of the project was focused on the long-term improvement of poor quality hardwood stands frequently encountered in the Loring Deer Yard area. Immediate benefits of the project included employment opportunities for First Nations people and the provision of winter browse for deer. Funding for the projects was provided by the Forestry Futures Trust Fund and the Ontario Living Legacy Trust. NFRM also funded a portion of the project in the form of prescription development, tree marking and supervision. First Nation contractors also completed stand improvement work as part of the Living Legacy Trust funded Yellow Birch Restoration Project. The forest management objective of this project was to release and space understory yellow birch that were established after tolerant hardwood strip cutting in Olrig township.

These projects are especially notable for several reasons: the innovative acquisition of funding from multiple sources, and very effective coordination of effort by NFRM, the considerable involvement of First Nation contractors in their implementation, the involvement of research organizations, and the large magnitude of the program (approximately 11,500 ha were treated through these projects during the 5-year audit period), and the high quality of the implementation that was achieved.

Best Practice

NFRM is to be commended for their innovative approach to the coordination of effort, and the high standard of operational implementation on the Loring Deer Yard Tolerant Hardwood Stand Improvement Project and the Yellow Birch Restoration Project.

Silvicultural Achievements

Table 8 compares the planned targets for renewal, site preparation, and tending with the actual achievements for the 1999-2004 planning term for the Nipissing Forest. Since the actual even-aged harvest area achieved during the FMP term was only 51% of the forecast, and the uneven-aged area was 45% of the forecast, less area than projected was available for renewal treatments. Accordingly, the original renewal and site preparation forecasts contained in FMP-25 have been pro-rated by the same factor to calculate the achieved levels of silvicultural activities. The tending forecasts were not adjusted, since the area available for tending is less dependent on the harvest area from the current term.

Table 8. Silvicultural accomplishments for the 1999-2004 FMP term as a percentage of the forecast activities for the Nipissing Forest.

Renewal Activities	Forecast for 1999-2004 (Table FMP-25)	Actual area completed for 1999-2004	Percent of forecast[1]
Regeneration			
Natural Regeneration			
Uneven-Aged Management	22,417	9,824	95%
Even-Aged Management	24,157	12,172	99%
Artificial Regeneration			
Planting	9,513	5,715	118%
Seeding	500	0	0%
Subtotal Artificial	10,013	5,715	112%
Total Even-Aged Management	34,170	22,836	131%
Total Regeneration	56,587	32,659	113%
Site Preparation			
Mechanical	10,064	4,173	81%
Chemical (Aerial/Ground)	225	828	722%
Total Site Preparation	10,789	5,347	97%
Tending			
Cleaning			
Motor-manual	2,700	995	37%
Chemical - aerial	3,400	1,186	35%
Chemical - ground	2,550	282	11%
Mechanical	0	84	na
Spacing, PCT, Improvement Cutting			
Even-aged	1,000	2,164	216%
Uneven-aged	1,200	8,162	
Total Tending	11,550	12,871	111%

[1] regeneration and site preparation achievements were pro-rated to the actual harvest area.

Natural regeneration targets for the term of the 1999-2004 FMP were essentially achieved as planned, with 95% of the forecast uneven-aged natural regeneration and 99% of the forecast even-aged natural regeneration having been reported during the 5-year FMP term.

The artificial regeneration program for the term of the 1999-2004 FMP has been overachieved compared to (pro-rated) forecast levels, with 118% of the tree planting, and 112% of the total program implemented during the 1999-2004 FMP term. The actual area site prepared was 97% of the planned level. Forecast seeding projects were not implemented, but these treatments were replaced by planting.

The total tending program for the 1999-2004 FMP term was completed to 111% of the forecast levels, due to the commendable effort in completing the large program of stand improvement initiatives which was discussed in the section on tending. The area cleaned during the FMP term was considerably less than forecast. A recommendation was put forward to improve the focus and effectiveness of the cleaning program.

Since only one year of information is available, from the 2004-05 Annual Report, it is too early in the 2004-2009 FMP term to quantitatively assess progress in meeting targets related to silvicultural forecasts, since any early shortfalls can be rectified in the remaining four years of the FMP term. NFRM was able to provide us with draft numbers for some aspects of the silvicultural program prior to their preparation of the 2005/6 annual report in November 2006, so some early trends can be evaluated. For the years 2004/05 and 2005/06, 2,634 ha of artificial regeneration, 512 ha of site preparation, 596 ha of cleaning, and 1,118 ha of pre-commercial thinning and stand improvement work were reported. Tree planting area, when pro-rated to the actual harvest area, is ahead of forecasted levels after two years. The areas on which site preparation and cleaning were conducted appear to be well below the two-year forecast, which reinforces the recommendations that were made related to these two activities. For the year 2004/05, 1,364 ha of natural regeneration were reported. With only one year of data for natural regeneration available, it is too early in the plan term to assess progress.

3.4.5 Renewal Support

The Company has a good program for the collection and processing of cones and seeds, and presently maintains a considerable seed stock at the Ontario Tree Seed Plant at Angus to support their artificial regeneration program through the current FMP period and beyond. At March 31, 2006, the Company had a seed stock of approximately 155.4 million viable seeds, consisting of white pine, red pine, jack pine, white spruce, black spruce, red spruce, Norway spruce, larch, and yellow birch. This stock is expected to supply the needs of the SFL for up to 10 years. Red oak acorns cannot be stored but are collected by NFRM on an annual basis to meet stock production needs. Due to a provincial shortage of red pine seeds, NFRM collection activities during the audit period focused on that species, collecting 228.1 hectolitres of red pine cones. NFRM also maintains a seed stock for speciality shrub species such as red osier dogwood and high-bush cranberry.

The 2004 FMP notes that "nurseries recently have been experiencing problems with poor germination of specific seedlots of white pine and white spruce. This seed may be liquidated or discarded because of its poor germination rates and germination energy percentage. The inventory will be rebuilt with fresh seed when bumper crops occur in these species". Poor seedlots may have contributed to the problems with white spruce planting stock that were previously noted. In general, the program for growing trees for planting is good, with the exceptions previously noted, and the Company works with local growers to strive for consistent quality and to address issues.

The Forest Research Partnership is the lead organization for tree improvement activities on the Nipissing Forest. The focus area for tree improvement work by the FRP is the Gurd Tree Improvement Area located in Gurd Township in the southeast portion of the Nipissing Forest. A variety of maintenance activities are conducted by NFRM on the progeny tests and seed production areas within the Gurd Research Area, and on a clonal seed orchard located near Mattawa. During the audit period, these activities were conducted in accordance with the approved AWS to a high standard of quality.

3.4.6 Access

No primary or secondary roads were planned for construction during the 1999-2004 plan term, and none were constructed. The 2004 FMP identifies planned construction of 33 km of new primary road and upgrading of 8.5 km of road from tertiary to secondary standards. Although no construction had taken place as of the time of this audit, the recent newly-available road funding from the MNR will enable the company to undertake at least some of its planned construction

Given the fact that much of the Forest is on private land, has a long history of use by many interests and groups, and that no single group has identified maintenance responsibilities for many roads, road quality on the Forest varies widely. Some roads are well-maintained and others are in poor states of repair.

During the course of the field inspections, the Audit Team noticed several instances in which secondary and tertiary roads were suffering from neglect. The signs of neglect were primarily constricting and poorly-maintained road surfaces and damaged culverts. Province-wide concerns regarding such conditions and the lack of clarity over who has maintenance responsibilities prompted the Ministry and forest industry to undertake the Forest Roads and Water Crossings Initiative[17] (FRWI). A task team assembled to address the issues produced a very thoughtful series of mechanisms to resolve ownership, and maintenance responsibilities. The first step in resolving these issues is the completion of an inventory of the roads and watercrossings. On the Nipissing Forest the inventory is nearing completion both the Company and MNR expect that discussions regarding maintenance and ownership responsibilities will begin in earnest shortly. Given the nature of the mechanisms to resolve ownership and maintenance responsibilities, it seems certain that the MNR will end up with responsibilities for most of the Forest's roads.

Ministry staff have indicated that they hope to enlist the assistance of non-forest-industry user-groups to help maintain those roads and watercrossings which provide important access for recreational purposes to the forest. The MNR hopes that this assistance will be in the form of money to pay for new watercrossings to replace those which are no longer sound. Although this is a practical approach, it is certain the MNR will need to contribute financially to these efforts. MNR staff indicated that there is no existing program or targeted allocation for these activities. In the last two years, MNR road funding has totalled approximately $70,000. Even if this level of funding were to continue it is unlikely that it would be sufficient to maintain and replace those crossings in the forest which are about to become the MNR's responsibility. The Audit Team believes that the MNR is unprepared to undertake what are about to be its new responsibilities.

Recommendation # 25

Corporate MNR should provide a level of funding consistent with the MNR's likely responsibilities regarding road and watercrossing maintenance on the Forest.

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[17] Forest Roads and Water Crossings Task Team. 2003. Forest Roads and Water Crossings Initiative Task Team Report. Ontario Ministry of Natural Resources.

Road Classification

The previous IFA identified the fact that the definition of "tertiary" road in place at the time (a road built for short term use – up to 5 years – for harvest and subsequent renewal operations) was not appropriate for the Nipissing Forest (or for other SFLs in the Great Lakes-St. Lawrence Forest) because the anticipated life and use-patterns of these roads was significantly different from those originally envisioned in the categorization of tertiary road. The 2004 FMPM addressed this issue somewhat by revising the classification of roads. Roads are now classified as primary (main roads), branch roads (i.e. between harvest blocks), and operational (i.e. within harvest blocks). This categorization is more appropriate to the nature of road use and persistence in the Great Lakes-St. Lawrence Forest. Planning requirements are sufficiently different between the new classification, and the old classification so as to foster the development of more appropriate management and use strategies.

Although the roads on the Nipissing Forest have not yet been reclassified using the new system (as indicated in Section 3.3.11), the MNR and NFRM have indicated that all roads would be reclassified as part of the roads and water-crossings inventory and in preparation for the 2009 FMP.

3.5 SYSTEMS SUPPORT

3.5.1 Human Resources

Both NFRM and MNR staff assigned to the Nipissing Forest were experienced, qualified, trained and able to complete the required forest management tasks.

NFRM operates under a simple organizational structure. Three harvesting and roads team members are assigned to oversee specific operators on the forest and are responsible for operations implementation. A planning forester is responsible for preparing FMPs, AWS's and Annual Reports. A silvicultural team consisting of one RPF and two technicians is led by an experienced silvicultural forester. Consultants, contractors, and other field staff are hired to support the NFRM staff as required. All staff report directly to general manager.

The licensees on the Nipissing Forest also employ field staff and supervisors who are responsible for the implementation and compliance of their particular operations.

Training

Effective training programs are in place for NFRM staff and licensees through annual compliance review and classroom and field training. NFRM staff received ongoing training in forest management planning, forest operations, silviculture, compliance, and human resources to meet the requirements of their respective positions. NFRM staff meet regularly to review forest management issues and similar joint meetings are held with MNR staff every month or two. NFRM also provides annual operational and safety training to the licensees and contractors including due diligence, workplace inspections, occupational health and safety, accident investigation, forest fire fighting, and compliance. The annual compliance plans identify the training needs and the annual training is organized by NFRM. At annual spring compliance meetings attended by

NFRM and licensees and contractors results of the prior year are reviewed and instructions for new practices and current issues are provided. NFRM maintains training records for each staff member and also records the training provided to the NFRM licensees.

Although the training provided by the company is delivered to all licensees and main contractors, it continues to be challenging to reach First Nations, low-volume independent licensees and subcontractors. These operators generally have less experience and training, and may not always attend meetings.

One of the recommendations of the previous IFA as that "NFRM should review the level of training provided to operators on the forest and ensure that all operators receive regular and appropriate training…." NFRM extends invitations to its training programs to these groups, but attendance can be irregular The groups may receive training elsewhere and or may not give the same level priority to training as do the Forest's more regular operators. NFRM indicated that they will continue to providing training opportunities to low-volume operators and subcontractors.

Performance appraisals of NFRM staff are conducted by the NFRM general manager. This includes a review of each staff member's responsibilities, accomplishments, difficulties encountered, training received and future targets and objectives including provisions for training.

MNR staff were also well trained. Good training records are kept for all staff, particularly for foresters who are required to report continuing education credits annually to the Ontario Professional Foresters Association. The MNR area forester attended a dozen or more forest management training sessions a year .

MNR staff receive an orientation package upon being hired which provides a good introduction to the MNR corporate and district organization, the North Bay office and operating and safety procedures. Newly-hired staff also receive various human resource and safety training such as first aid, freedom of information, WHIMIS, bear awareness, among others.

3.5.2 Documentation and Quality Control

Good document control procedures are in place for all FMPs, AWSs, ARs, amendments and AWS revisions at both MNR and NFRM. The planning records were found to be very well organized in both digital and paper format. The auditors could retrieve most planning documents quite easily.

3.6 MONITORING

Compliance monitoring on the Nipissing Forest is more complex than on many other forests due to the implementation of selection, and shelterwood harvesting, the presence of more values, the use of complex AOC prescriptions, and the higher level of public use of the forest.

NFRM compliance planning consists of a five-year compliance strategy and annual compliance plans that are approved in each AWS. A monitoring section in the 2004

FMP provides a good description of the forest operations inspection program, the roles and responsibilities for compliance, the monitoring methods for exceptions, and AOCs, and the program for assessing regeneration success as required by the1996 FMPM.

The NFRM five-year compliance strategy and annual compliance plans were both very comprehensive and met the requirements of the 1998 Guideline for Forest Industry Compliance Planning. NFRM has done a good job of assessing its compliance program and setting priorities for continuous improvement.

The annual NFRM compliance plans are submitted and approved as part of the AWSs. These plans include details of where operations will be conducted, and identify specific compliance and training priorities. Each AWS is approved with a list of "conditions of approval", which helps remind operators of the guidelines, legislation and forest practices that are required to be implemented to ensure compliance. The elements of the conditions of approval are also captured in the AOC prescriptions. NFRM holds a spring compliance meeting with all licensees and the MNR.

NFRM and MNR each complete a summary of compliance inspections and results as part of the annual reporting (i.e. AR-12.1 and AR-12.2 from the 1996 FMPM and AR-12 and AR-13 from the 2004 FMPM). The monitoring and assessment section of the annual reports met the 2004 FMPM requirements.

The MNR was previously operating under a broad district compliance strategy, which served mainly to identify compliance staffing and budgeting. The strategy lacked details of the specific compliance issues and targets that could be used to focus the MNR compliance inspectors. In the fall of 2005, North Bay MNR added a Forestry Technical Specialist position responsible for compliance and silvicultural effectiveness. This individual will help direct the MNR compliance inspectors and resolve any conflicts with NFRM. The Forestry Technical Specialist has prepared a new one-year compliance plan for the MNR for 2006-07 based on a risk assessment completed for each of the 77 operating blocks in the 2006-07 AWS. It outlines a plan for 52 spot checks and assigns these to each of the five MNR certified compliance inspectors. In addition MNR planned to verify all industry non-compliances as well as audit at least 10% of all completed or suspended reports by NFRM.

All SFL and MNR compliance inspections are performed by certified inspectors. The majority of industry compliance inspections are completed by the licensees inspectors and approved by NFRM staff. NFRM staff also conduct compliance inspections for the lower-volume licensees which do not have certified inspectors.

A higher level of compliance monitoring is undertaken for the selection and shelterwood harvest areas than for areas harvested using clearcutting. Whenever there is an issue regarding the marking prescription used in the partial-cut systems, NFRM and MNR bring in a certified marking auditor to verify the marking or the marking prescription.

There were two compliance reporting systems used during this period. FOCIS reports started July 9, 1999 and were used up to February 14, 2004. The new FOIP reports were used from February 15, 2004 to March 31, 2006. One of the problems with the old FOCIS reports was that it was difficult to develop statistical data to help assess the compliance program.

There were a total of 1,293 compliance inspection reports during the five year audit period, with 1,118 (i.e. 224 per year) inspection reports by NFRM and its licensees and 175 (i.e. 35 per year) inspection reports by MNR. NFRM reported a total of 69 non-compliances representing 6% of all reports, while the MNR reported a total of 53 non-compliances representing 30% of all reports. Some MNR staff were concerned by the lower number of non-compliances reported by the industry compared to MNR. However, given that all industry compliance inspections are completed by MNR-certified compliance inspectors, and the fact that many of MNR's inspections have been follow-up inspections of identified non-compliances or risk-based (that is, they tend to focus more on high-risk situations) the Audit Team is not concerned by the discrepancy in non-compliance rate. There were a total of 88 harvest non-compliances, 26 access non-compliances, eight tending non-compliances, and one renewal non-compliance. The Audit Team finds the overall level of non-compliance was not excessive.

We examined the compliance report submission dates relative to the schedule mandated n the MNR's compliance policy and the five-year and annual compliance plans for the Forest. The information for the SFL-submitted FOCIS reports was not available for this analysis, so the following is based on all the other inspections (i.e. MNR-submitted FOCIS reports and MNR -and company-submitted FOIP reports).

Table 9 shows that many inspection reports are being submitted late, by both the company and the MNR. For example, of the 52 reports included in the sample documenting non-compliance, 40 (77%) were submitted later than the required 5-day deadline. Many reports indicating compliance were also submitted late. Of the total of 618 reports included in this sample, 247 (40%) were submitted late. It was difficult for the auditors to define the specific reasons for the late reporting. Compliance reporting is time consuming; it often takes a day or two doing inspections, and then a day to write-up and submit inspections. There may also be delays of a few days or more between the time when the inspection is conducted and the time the inspection is actually submitted through FOIP due to staff being tied up with other responsibilities. Often industry staff needed to schedule time in the office away from their field supervision responsibilities, which might only be feasible once every week or two. MNR compliance staff had restricted budgets and access to vehicles, which also appeared to affect compliance reporting times.

Given the high rate of late-reporting and the Audit Team's belief that the company and MNR are diligent in their efforts related to compliance reporting, the Audit Team believes that the timelines for reporting may need to be revised in the MNR compliance policy, and the five year and annual compliance plans. However, given the lack of definitive reasons for late reporting, it is difficult to provide a recommendation at this point.

Table 9. Analysis of late-submitted compliance reports based on a sample of 257 reports submitted by MNR and 361 reports submitted by the Company.

Compliance Reports	Due date relative to inspection	Reports submitted late		
		MNR	SFL	Total
Reports indicating non-compliance	within 5 days	23	17	40[1]
MNR Reports indicating compliance	within 20 days	51	na	51
SFL access-related reports indicating compliance	within 10 days	na	27	27
SFL non-access-related reports indicating compliance	within 20 days	na	77	77

[1] 52 reports identified non-compliances, and of these 40 were submitted late

Suggestion # 7

District MNR should document the reasons for late compliance reporting. Corporate MNR should assess whether the schedule for submitting compliance reports is realistic based on information provided by the District MNR.

MNR Compliance Program Budget

Expenses associated with forest compliance work are not funded through explicit MNR budget allocations. MNR North Bay funds its compliance program primarily from base funding which covers general staffing, some general office costs and limited number of vehicles. One full-time compliance inspector and a truck are budgeted from the base funding. North Bay District uses three certified compliance inspectors on a one-third time basis, sharing one truck to cover their compliance mandate.

Between 2001 and 2006, North Bay District received roughly $7,100 per year in funding for compliance flights and to acquire SAP photography. Recent costs for one flight and the photos have averaged over $12,000 per year. There is no funding dedicated to on-the-ground compliance inspections, inspector training, or funding for investigations, the administration of penalties, or legal costs. Recently, the District has been overextended on base funding, which limits the ability to cover unplanned compliance costs. District staff indicated that they have not pursued many possible instances of trespasses onto Crown land from operations on private lands because of the lack of funding for property surveys and investigations.

Recommendation # 26

Corporate MNR should increase the District's compliance budget to permit staff to undertake a level of compliance monitoring and follow-up consistent with the MNR's role in stewardship of the Forest.

3.6.1 General Monitoring

During the 1999-2004 term period, the Company completed free-to-grow surveys on 21,450 ha, or 88% of the forecast area of 24,376 ha. Generally, the results indicate a low level of surveyed area that was not satisfactorily regenerated (NSR) at the time of the surveys. Exceptions were the Mixed Conifer Forest Units, for both clearcut and uniform shelterwood systems, and the Mixed Red and White Pine Seed Tree Forest Unit. On these mixed forest units, it is possible that competing vegetation on the richer sites may be negatively affecting the growth and development of the coniferous regeneration.

With shelterwood harvesting, there is a balance between the level of basal area removal and the development of coniferous regeneration in the understory, which is affected by the levels of competing vegetation and the amount of shading and protection provided for the seedlings by the residual stand. This will be different for different forest units, and will affect the scheduling of surveys to assess, among other things, the need for tending, and the achievement of free-to-grow status. In the case of the shelterwood and seed tree treatments, timing of the surveys may account for the higher levels of NSR – surveys are being conducted too soon, before the regeneration has developed sufficiently to meet the silvicultural standards.

We also note that changes in forest unit definitions, assessment and reporting methods for free-to-grow surveys make it somewhat difficult to track. A consistent approach would be beneficial.

The total area of barren and scattered plus depleted stands in the 1999-2004 FMP (Table FMP-1) was 59,976 ha, while in the 2004-2009 FMP, the value is 43,057 ha, a decline of 16,919 ha. The actual harvest area for the past two FMP terms (1994 to 2004) was 56,170 ha, thus, the inventory for the Nipissing Forest includes less than two FMP terms worth of harvest area and other depletions. This indicates that the Company is completing free-to-grow surveys at a rate sufficient to keep the inventory properly up to date for planning purposes.

Silvicultural Effectiveness Monitoring

Until recently, NFRM did not have a staff position dedicated to the silviculture and monitoring program. Staff shared the responsibilities for supervision and monitoring of the silviculture program with those of the harvest operation. Because of the complexity of the harvest operation on the Nipissing Forest, it appeared that in some instances staff did not have the time or resources to fully coordinate the silvicultural planning requirements with the needs for completing silvicultural assessments and operational aspects. NFRM has recognized the issue and recently created a full-time position of silviculture and monitoring forester. The individual hired to fill this position will be able to bring continuity, a consistency of approach, and a better integration of the silvicultural planning and operations, and the related monitoring needs of the forest.

NFRM has developed an excellent monitoring program to support its silviculture program and to evaluate effectiveness. Field surveys are conducted at various stages in the management stands under the different silvicultural systems. These include the following:

- Pre-harvest cruising, conducted to validate the forest unit and assess the distribution of basal area;
- Tree marking audits conducted by NFRM on contractors' work (the contractors also conduct self-compliance audits);
- Post-harvest, Stage 3 Updates, conducted to quantify the condition of the overstory. This includes inventory (FRI) attributes of species composition, basal area and stocking and is used for inventory update;
- Post-harvest surveys of understory conditions to assess further treatment needs.

these include site visits to delineate tending areas within treatment blocks, and assessment and delineation determination of site preparation needs;
- Post-treatment surveys of site preparation, tree planting, and tending projects, which are used to support documentation of treatments and precision mapping for invoicing purposes; and
- Free-to-grow surveys.

NFRM worked closely with Mitig Forestry Consultants to develop a silvicultural information system which will support continuous inventory - inventory update, silvicultural tracking, and scheduling functions. All surveys results are maintained in NFRM's silvicultural information system, which has been fully operational for two years, but contains silvicultural effectiveness survey data dating back to 2002. Survey methods that were recently designed and implemented by NFRM will include assessments of tending needs, understory and regeneration layers, and stand structure, and thoroughly document the description (in terms of historical, present and future forest units and FRI attributes) and treatment history of each site, for tracking purposes. The system has been designed to support the special information needs associated with shelterwood and selection management areas.

The free-to-grow and other silvicultural effectiveness information were used in the development of successional rules for modelling, and in the refinement of the Silvicultural Ground Rules during preparation of the 2004-2009 FMP. It will also help the Company to forecast costs, and optimize silvicultural activities by directing treatments to the sites where they will be most effective.

The Audit Team believes that the silvicultural information system developed for NFRM, warrants a designation of Best Practice. This is due to the systems diverse uses, integration of information needed to effectively manage Great Lakes – St. Lawrence forest stands, flexibility for the analysis of silvicultural monitoring information, and its demonstrated use in plan preparation.

Best Practice

NFRM is to be commended for the development of a comprehensive silvicultural information system for tracking and scheduling silvicultural activities, assessing silvicultural effectiveness, and conducting continuous inventory updates that is relevant to both Boreal and to Great Lakes - St. Lawrence Forests.

Exceptions Monitoring

An exception to the Ministry's silvicultural guides for Great Lakes conifer and tolerant hardwood forests was included in Table FMP-10 in the 2004-2009 FMP (and was also included in the previous 1999-2004 FMP). The exception permits the full-tree logging method in partial harvest systems for the BY, HE, HDUS, LWMX and PWUS forest units. The full-tree logging method in partial-harvest silviculture systems is considered "Not Recommended" in the above noted silvicultural guides due to the high risk of damaging residual trees and advanced regeneration, as well as possible loss of productive land to slash piles. The exception included in Table FMP-10 was qualified in the text by stating that the full-tree logging method will only be undertaken if the trees being forwarded are fine-branched such that excessive damage to residual trees or regeneration does not occur. The full-tree harvesting practised in the above forest units on the Nipissing Forest, however, only includes conifers and not hardwood species; thus NFRM proposed the practice as an acceptable logging method. Exceptions are permitted provided that a monitoring program is in place that demonstrates that the potential negative effects do not occur.

NFRM, in collaboration with MNR and the Forest Research Partnership, designed and implemented an excellent program for exceptions monitoring related to full tree harvesting in shelterwood regeneration cuts in these situations. All parties were involved in the design of the monitoring, the data collection was coordinated by NFRM staff, and Regional MNR staff assisted with analysis and reporting of the results. The collaborative monitoring effort as a whole was done to a high standard.

The initial results suggest that there are no negative effects of the full-tree logging practised on the Nipissing Forest. MNR has informally indicated to NFRM that the results indicate the practice is acceptable but the need for further monitoring, if any, has not been made clear. MNR has indicated the need for confirmation from other SFLs in the Region before a revision to the Silvicultural Guide will be considered.

Recommendation # 27

MNR should formally respond to NFRM regarding the status of the exceptions monitoring program related to Full Tree Harvesting in Shelterwood Regeneration Cuts on the Nipissing Forest.

This response required by Recommendation # 27 above is necessary to clarify future direction in regard to additional monitoring needs, the involvement of other SFLs, and the process for revising the status of this logging method as an exception to the Conifer Silvicultural Guide.

3.6.2 Annual Reports

Annual reports prepared under the 1996 FMPM included both a spring submission for silviculture due on April 15 and a fall submission for harvest due on Nov 15 of the following year. Annual reports prepared under the 2004 FMPM consist of just one submission, due by Nov. 15.

The 2004 FMPM requires annual reports for the last year of an FMP prepared under the 1996 FMPM to include the additional requirements associated with the year-ten annual reports. Because 2003/04 was a transition year between the planning requirements, the 2003-04 annual report for the Nipissing Forest included three submissions: a spring submission and a fall submission following the direction of the 1996 FMPM, and a 10-year annual report submission which was to be provided in February of 2005.

MNR was responsible for reviewing all annual reports up to 2003-04. In the 2004 FMPM, MNR has indicated that they will no longer be reviewing all annual reports and instead would review only the three, seven and ten year annual reports. Since the 2003-04 annual report represents the last year of the 1999-04 FMP, it was to be reviewed by MNR District and Regional offices.

Overall the annual reporting was found to be in compliance with the requirements of the

FMPM and related direction. Most annual reports were complete and generally submitted on time, and there were very few alterations required as a result of MNR's review.

The 2001-02 and 2002-03 annual reports were submitted on time, and have been reviewed and accepted by MNR. The spring 2003-04 annual report was also submitted on time. The annual reporting submission and review has fallen behind since the 2003-04 annual report due to effort required to complete the 2004 FMP and due to a change in staff at NFRM. The new 1 year 2003-04 annual report (prepared under the 2004 FMPM) was two months late, the 10 year 2003-04 annual report was three months late, and the 2004-05 annual report was submitted four months late. (The 2005-06 annual report is not due until November 2006.) MNR reviews are still pending for the 2003-04 annual reports, however the 2004-05 annual report was accepted at the MNR portal without review.

Table 10. Summary of Annual Report submissions and review dates.

FMP/AWS	FMPM	Due Date	Draft Submission	MNR Review Completed	Final Submission
2001-02 AR Spring	1996	15-Apr-02	15-Apr-02	unknown	unknown
2001-02 AR Fall	1996	15-Nov-02	15-Nov-02	23-Dec-02	28-Jul-03
2002-03 AR Spring	1996	15-Apr-03	15-Apr-03	March, 2004	17-Nov-04
2002-03 AR Fall	1996	15-Nov-03	19-Nov-03	unknown	06-Aug-04
2003-04 AR Spring	1996	15-Apr-04	15-Apr-04	pending	pending
2003-04 AR (1yr)	2004	15-Nov-04	25-Jan-05	pending	pending
2003-04 AR (10 yr)	2004	15-Feb-05	10-May-06	pending	pending
2004-05 AR	2004	15-Nov-05	21-Mar-06	Accepted without review	

Recommendation # 28

MNR should complete its review of the 2003-04 Annual Reports, and the company should address any required alterations.

3.6.3 Report of Past Forest Operations/Ten-Year Annual Report

The audit reviewed the RPFO that was completed in or about March 2003, but this review was cursory, since the audit team was directed to focus on the more recently completed Ten-Year Annual Report, which was completed for the 2003-04 year. This was the first year for which Ten-Year Annual Reports were required, and it was a phase-in year. The additional discussion in the Ten-Year AR, compared to a standard AR, is thoughtful but reflects a lack of long time series for many of the data that are being reported. Many of the elements described in the additional Ten-Year requirements have been discussed elsewhere in this report, including the analysis of disturbance, renewal, and usage of the AHA, a review of modelling assumptions, and an assessment of the status of implementation of recommendations of the previous IFA. The sustainability assessment is described below in section 3.7.2.

3.7 ACHIEVEMENT OF MANAGEMENT OBJECTIVES AND FOREST SUSTAINABILITY

The Audit Team is required to assess the sustainability of forest management using a specific methodology described in the IFAPP. The IFAPP states that "Compliance with applicable criteria [of the IFAPP] will determine whether the forest unit complies with the general principle of forest sustainability". The field observations of the Audit Team are also to be considered in assessing sustainability. Section 3.7.1 assesses the extent to which the management objectives of the 1999 FMP were met and makes a preliminary assessment of the progress being made in meeting the objectives of the 2004 FMP. Sections 3.7.2 and 3.7.3 review the information in the Ten-Year Annual Report and the Trend Analysis. Section 3.7.4 presents the Audit Team's conclusions regarding sustainability.

3.7.1 Achievement of Management Objectives

The IFAPP requires that the assessment of achievement of management objectives draw upon the most recent completed RPFO. As described in Section 3.6.3, the most recent complete RPFO and the ten-year AR both concluded that management objectives in the in the 1999 FMP were essentially met, although the underharvest was identified as a deviation from harvest objectives.

Table 11 reviews the achievement of the management objectives for the 1999 FMP, and Table 12 reports on the objectives of the 2004 FMP. Because only one year's information was available for most of the objectives and targets of the 2004 FMP, no definitive statements can be made regarding achievement of most of that plan's objectives.

Table 11. The Audit Team's assessment of the achievement of goals and objectives of the 1999 FMP.

Goals/ Objectives	Achievements	Notes
Forest Diversity		
Age Class Objective: Maintain a range of age classes over time in all forest units; approach a more balanced age class distribution for each forest unit • No targets identified	Although a range of age classes exists in all forest units, the objective is too subjective to assess in depth.	One of the recommendations of the previous IFA was to develop more quantitative objectives. The company has achieved this in the 2004 FMP.
Forest Unit Objective: Within 100 years create a distribution of forest units more similar to that at the time of pre-logging and pre-fire suppression. **Target:** Increase the area in red and white pine uniform shelterwood forest unit from 21,500 ha to 31,500 ha over the 100 year modeling period.	Annual reports show approx. 4,200 ha of white pine shelterwood forest treated by planting, compared to approx. 1,700 harvested. This is good progress toward the objective	
Old Growth Objective: Over the term of this plan, have at least one old growth red pine and white pine ecosystem protected in each site district for which the Nipissing Forest is responsible. **Target:** Increase the amount of area in red and white pine uniform shelterwood, in age classes older than 121 years of age from 650 ha to 1000 ha.	Table FMP-9 of the 2004 FMP indicates that there are more than 3,500 ha of PWUS on the forest older than 121 years at the start of the 2004 plan period. New parks and protected areas have increased pine protection on the Forest.	Also, NFRM has requested a "gap analysis" from Ontario Parks to ensure there are no gaps in representation for all ecosystems in the Forest. The analysis is expected in late 2006.
Social and Economic		
Wood Supply Objective: Produce a sustainable supply of fibre for the wood using industries supplied by the Nipissing forest on the available land base. **Targets by product for the present term**: 1. 228,00 m3 conifer /yr	The average annual conifer harvest was 204,728 m3, or 90% of the target. The average annual hardwood harvest during the plan period was 189,601 m3, or 55% of the planned level. This is consistent with historical norms.	Utilization of hardwoods has long been an issue on this forest, due to low quality and poor markets, which make many of the stands uneconomic to

Goals/ Objectives	Achievements	Notes
2. 342,000 m3 hardwood/yr		harvest.
First Nations Social and Economic Objectives: 1) Minimize the impact of forest operations on Aboriginal communities' traditional uses of the forest. 2) Provide economic opportunities for Aboriginal communities within the Nipissing Forest **Target**: - Allocate 1.8% of the AHA to each of the three local Aboriginal communities, for a total allocation of 5.4% of the AHA.	The target allocation was incorporated into the 2002 version of the SFL. Although First Nations licensees did not achieve their utilization, at 52% of the allocation, their actual harvest compared to allocated was comparable to the shareholders . First Nations have been provided with significant opportunities to work on the Company's stand improvement efforts	The Company and MNR have worked hard to provide economic opportunities to the First Nations, leading to a Best Practice in this audit. There remain desires on the part of the First Nations to improve their economic benefits from the Forest.
Other Social and Economic Objectives: 1)Protect cultural and spiritual values in the Nipissing Forest that are identified on the values map 2) Minimize the impact of forest operations on recreation areas that are identified on the values maps.	Many stage 1 and stage 2 archeological assessments were completed to ensure identification and protection of First Nations values. There were no instances of trespasses into cultural heritage AOCs. Many of the Forest's AOCs were related to recreational values. Thirty-four RSAs were negotiated during the plan period.	Lack of quantitative targets makes this objective somewhat difficult to assess
Values Dependent on Forest Cover		
Objectives for Selected Species: Manage forest cover to maintain preferred habitat levels for selected species. **Targets**: - Preferred habitat level for moose (winter habitat) – 72,200 ha, for pileated woodpecker 167,300 ha. Target levels identified for 13 other species as noted in table FMP-13	These targets are predicted to be obtained by the SFMM modeling	As the targets were set to be consistent with the modelling results, it is axiomatic that their attainment is predicted.
Objective for fisheries habitat: Protect fisheries habitat in the Nipissing Forest. - No targets identified	Objective is very broad; and so precise assessment is not possible. Use of fisheries guidelines and lack of severe compliance issues suggests objective will be obtained.	

Goals/ Objectives	Achievements	Notes
Objective for Resource-Based tourism: Preserve the integrity of the Nipissing Forest for resource-based tourism at the landscape level and at the operational level. - No targets identified	The plan provided AOC's that protected many values of importance to the tourism industry. There was a good level of dialogue between the Company and tourism operators, so that the Company and tourism operators were able to keep each other informed and work out solutions to issues and concerns.	The objective is general and difficult to evaluate, however the audit team was impressed by the high quality of Company-stakeholder relations in general.
Objective for Trapping: Maintain the habitat of species used by the trapping industry. - No targets identified	Objective is very broad and so precise assessment is not possible. Use of MNR guides suggests that habitat will be maintained	
Silviculture		
Silviculture Objectives: 1) Deliver an effective silviculture program which will result in a continuous yield of forest crops of the species, quantity, and quality required by the wood-using industries for which the Nipissing Forest is a source of supply. 2) Increase the amount of higher value timber species and products by using Silvicultural strategies that will best match species to site **Targets**: 1. Harvest 16,252 ha using the shelterwood system 2. Harvest 16,986 ha using the selection system 3. Harvest 22,694 ha using the clearcut system. 4. Regenerate 56,587 ha of cutover, of which 46,574 ha is to be by natural regeneration and 10,013 ha by artificial regeneration 5. Tend 10,850 ha of existing plantations requiring treatment to attain FTG status 6. Conduct stand improvement cutting and thinning on 1,200 ha of immature stands to improve growth and quality.	Only 51% of the forecasted area for the 1999-2004 FMP was harvested. When the silvicultural forecasts for the 1999-2004 FMP term are pro-rated to the actual harvest levels, NFRM completed 112% of the planned artificial regeneration program, and 93% of the planned natural regeneration for even-aged management. Very little of the planned natural regeneration in uneven-aged selection harvest areas was achieved, mainly due to the very low harvest levels in those forest units during the FMP term. Considerable effort was undertaken to re-establish the conifer component in mixed white birch and poplar stands using intensive treatments. 111% of the total tending program was completed during the FMP term. NFRM did an excellent job in implementing projects for stand improvement of yellow birch and low-quality tolerant hardwoods, completing a total of 10,316 ha during the term, greatly exceeding the forecast. However, only 27% of the cleaning portion of the forecast tending program was completed. During the field assessment we observed a number of	NFRM completed the silvicultural program as planned, and for some treatments exceeded the forecasted areas. Generally, we found the silviculture program on the Nipissing Forest to be effective and well-implemented. The stand improvement activities and intensive tree planting treatments to restore degraded intolerant hardwood-mixedwood stands will increase the amount of higher value timber species and products on the Nipissing Forest. However, to ensure the

Goals/ Objectives	Achievements	Notes
	plantations that will require tending to achieve free-to-grow status. This will be particularly important for the restoration efforts in the mixed intolerant hardwood-mixedwood forest units to ensure the survival and growth of the conifer component.	success of the intensive treatments, sites with high levels of competition to conifers should be identified, the needs for cleaning should be assessed, and the appropriate treatments should be implemented as soon as possible.

Table 12. The Audit Team's assessment of the achievement of goals and objectives of the 2004 FMP.

Goals/ Objectives	Achievements	Explanation
Forest Diversity		
Forest Composition Objective: Move towards a species composition more similar to that at the time of pre-logging and pre-fire suppression. **Targets:** - Quantitative targets are identified for White Pine Shelterwood, Red Pine, Yellow Birch, Jack Pine, Poplar, and White Birch/Poplar forest units. - The following forest units have no targets, but acceptable ranges are identified: Spruce/Fir, Mixedwood, Mixed Conifer Lowland, Mixed Lowland, Tolerant Hardwood Uniform Shelterwood, Tolerant Hardwood Selection.	SFMM modeling indicates that objectives will be attained if the harvest level approaches the planned amount. Management strategies have been developed to attain the targets. Plan contains detailed strategies to work towards the objectives. Objectives for Pw follow. Comparably well-considered strategies are identified for other forest units. Continue with the restoration of white pine in the Nipissing Forest by converting areas within the white birch/poplar forest unit (BW), the poplar forest (PO) unit (mainly site class 3) and the mixedwood forest unit (MW). When conducting pre-cut inspections, evaluate sites for evidence of white pine in the past (e.g. large old stumps). Develop prescriptions to restore these sites to the white pine uniform shelterwood forest unit. Increase the component of white pine in the white pine seed tree (PWST) forest unit to achieve adequate stocking to move it to the white pine uniform shelterwood forest unit where conditions are suitable. Follow-up with silvicultural effectiveness assessments on sites restored to white pine uniform shelterwood, and prescribe any necessary follow-up treatments, to ensure that the treatment is successful.	It's too early in the projection period to assess whether targets will be attained. However as the targets were developed to be consistent with modelling runs, they should be attained.
Red Oak Objective: Maintain or increase the red-oak component in stands where it occurs **Target:** Maintain (at 38,886) the area of stands containing red	Silvicultural activities aimed at promoting red oak are consistent with meeting this target. They include ensuring that the proportion of red oak remains at least as high after harvest as it was before, and planting of 5, 000 to 10,000 trees per year.	

Goals/ Objectives	Achievements	Explanation
oak.		
Conifer Objective: For the mixed conifer lowland FU, ensure that the proportion of spruce and cedar remain relatively similar for the forest unit as a whole. **Target:** Maintain at about 40% spruce and 30% cedar overall.	Silvicultural and harvest prescriptions aimed at management of lowland conifer are consistent with meeting this target. Prescribed treatments focus on the use of CLAAG (careful logging around advanced growth), follow up plant if necessary, and leaving average of 80% of cedar for wildlife and a seed source for cedar regeneration.	
Age Class Objective: Move towards a forest with a more even amount of area in each age class, with relatively less are in the older age classes. **Targets**: • Achieve and maintain the following age class distribution: 0-30 yrs 15-25% 31-60 yrs 15-25% 61-90 yrs 15-25% 91-120 yrs 10-20% 121+ 10-20% Specific Forest Unit targets are identified in the Plan	SFMM runs for the Selected Management Alternative indicate the following age class distribution: 0-30 yrs 21% 31-60 yrs 22% 61-90 yrs 26% 91-120 yrs 15% 121+ 16% So it appears targets will be met.	It's too early in the projection period to assess whether targets will be attained. However as the targets were developed to be consistent with modelling runs, they should be attained.
Spatial Distribution Objective: Increase the amount of old growth areas that occurs in larger patch sizes. • No targets identified	The FMP notes that it is difficult working towards this objective without the benefit of spatial modelling tools. The strategy for working toward this objective is based on selecting old growth areas adjacent to other existing old growth areas and thereby increasing e the amount of area that occurs in larger patch sizes, pending the availability of spatial modeling tools.	Attainment and use of spatial modelling tools will be necessary to definitive progress towards meeting this objective
	Social and Economic	
Wood Supply Objective: Provide a sustainable, continuous and predictable wood supply from the forest that will meet, as closely as possible and for as long as possible, the current recognized industrial demand of the forest.	There is only one year of data from the current plan period available at the time of writing but it follows historical trends: Poplar harvest = 60,000 m3 or 35% of target	The Company met or exceeded its conifer targets, but under performed in terms of hardwood harvest.

Goals/ Objectives	Achievements	Explanation
• Targets by product for the present term: 1. 168,760 m3 conifer sawlog/yr 2. 53,400 m3 conifer pulp/yr 3. 8,900 m3 hardwood veneer/yr 4. 71,742 m3 hardwood sawlogs/yr 5. 309,200 m3 hardwood pulp/yr • Targets by species group for the present term 1. PO – 171,292 m3/yr 2. BW – 112, 650 m3/yr 3. PW/PR – 68,830 m3/yr 4. SPF – 153,330 m3/yr 5. Hwd – 105,900 m3/yr	Birch harvest = 47,000 m3 or 42% of target Pine = 137,000 m3 or almost 200% of target SPF = 96,000 m3 or 63% of target; and Hwd = 72,500 m3 or 68% of target. Hwd veneer – 2,049 m3 or 23% of target; Conifer sawlogs = 177,700 m3 or 105% of target Conifer pulpwood = 56,600 m3 or 106% of target Hwd sawlogs = 34,900 m3 or 50% of target; Hwd pulp = 129,300 m3 or 42% of target	However, it is too early to make a definitive assessment of the success in meeting this objective
First Nations and Aboriginal Community Social and Economic Objectives: Be involved in forest management and benefit economically through partnerships, employment opportunities and new business relationships. **Targets:** 1. Invite all communities to participate in the PT for 2009 FMP. 2. Continue to provide a position from the Aboriginal Working Group on the LCC. 3. NFRM to continue sponsoring courses and training sessions. 4. Continue to offer field trips for students and community members 5. NFRM to work with Aboriginal Working Group to identify funding sources for Native Ranger Program 6. 10% increase in total average contract value for all communities combined over next 5 years 7. Increase total harvest to 10% of AHA by end of the FMP	The First Nations have a higher proportion of the planned harvest during the 2004 FMP than they had in previous plans, at 8%. No information was available on their performance during this plan period, but the higher allocation suggests that they will receive greater economic benefits during this plan period than in the previous one. The Aboriginal Working Group has continued to meet and there has been continued training and encouragement of a First Nations rep to attend the LCC meetings.	Improving the economic participation of the First Nations on this forest has been a priority for management, with tangible results.

Goals/ Objectives	Achievements	Explanation
Tourism Objectives: 1) Respect the presence of resource-based tourism on the Nipissing Forest. 2) Respect the presence of other commercial business on the Nipissing Forest. • No targets identified	The Company signed 34 RSAs during the development of the 2004 FMP, and these contained provisions for measures to minimize the impacts of harvesting on the tourism operation. Company has good stakeholder relations in general.	
Cultural and Spiritual Values Objective: Protect cultural and spiritual values, and high potential cultural heritage values, in the Nipissing Forest that are identified in the values mapping system. • No targets identified	Many stage 1 and stage 2 archeological assessments were completed to ensure identification and protection of First Nations values. There were no instances of trespasses into cultural heritage AOCs.	
Recreation Objective: Minimize the potential impact of forest operations on recreation areas that are identified on the values map • No targets identified	Many of the Forest's AOCs were related to recreational values. Thirty-four RSAs were negotiated during the plan period.	
Values Dependent on Forest Cover		
VTE Species Objective: Maintain habitat and protect critical sites for any vulnerable, threatened, endangered or species of special consideration know to occur on the Nipissing Forest. • No targets identified	Attainment of this objective is based on use of AOC prescriptions. However habitat modelling as implemented shows that habitat for the red-shouldered hawk (a species of concern) is not maintained above the level of the lowest simulated in the SFMM null run. So this objective may not be met for red-shouldered hawks.	Recommendation # 17 directs the MNR to revise the direction provided to planning teams which permits broad and extensive declines in wildlife habitat and habitat levels to fall below those predicted to occur in the SFMM benchmark runs.
Wildlife Values Objectives: 1) Conduct required F&W surveys in support of the 2004 FMP. 2) Maintain the quality and quantity of moose habitat of the five-year term of the plan. 3) Maintain the habitat, especially the quality and	1) This report found that while the MNR has done well in conducting MAFA surveys, it has not yet addressed one of the recommendations of the previous audit related to fisheries information – although progress in developing a predictive	Recommendation # 18 of this report addresses the need to continue making progress in waterbody classification on the

Goals/ Objectives	Achievements	Explanation
quantity of winter cover, for deer in the Loring Deer Yard. 4) Provide the habitat for species that benefit from shoreline disturbance such as beaver and mink. • No targets identified	protocol has been made. 2) Moose habitat component of the FMP is very effective measures to protect moose habitat 3) Strategies for maintenance of the deer yard focus on fostering species which provide important winter thermal cover, and provision of browse through working in the winter in the yard, also planting of red-oak. 4) Strategies for provision of shoreline habitat include use of the warm water fishery area of concern prescription to help provide appropriate habitat, however use of the prescription is hampered by the lack of progress in developing the fisheries assessment protocol.	Forest. This will address both objective 1) and 4).
Fish Habitat and Water Quality Objective: Protect water quality and fish habitat within watercourses and waterbodies affected by forest management. • No targets identified	This objective is to be addressed using the Fisheries Habitat Guide.	Recommendation # 18 described above will also help meet this objective.
Silviculture		
Silviculture Objectives: Ensure silvicultural activities create the desired future forest condition. • **Targets:** Specific targets are identified for specific silvicultural activity classes.	NFRM is using their silvicultural information system to track the actual outcomes of silvicultural treatments with the predicted outcomes that were used in the forest modeling.	Since only one year of information is available, from the 2004-05 Annual Report, it is too early in the FMP term to assess progress in meeting targets related to the balance of renewed area by forest units.
Enhanced Forest Management objective: Conduct enhanced forest management objectives on the Nipissing Forest. **Targets:** 1. Conduct 80 ha/yr of commercial thinning for the five-	In 2004/05, no commercial thinning was conducted; a total of 957,368 red and white pine trees were planted; for the years 2004/05 and 2005/06 (draft numbers for 2005/06 were provided by NFRM in advance of the Annual Report preparation), a total of 1,818 ha of even-aged and uneven-aged stand improvement activities	Since only one year of information is available, from the 2004-05 Annual Report, it is too early in the FMP term to assess progress.

Goals/ Objectives	Achievements	Explanation
year term 2. Restore 4,500 to 6,000 ha of suitable suites to the PWUS or PR forest units from the BW, PWST, PO and MW forest units during the five-year term. 3. Conduct tolerant hardwood stand improvement on all HDSEL stands harvesting during the 2004-2009 term.	were reported.	
Silvicultural Monitoring Objective: Develop a comprehensive silvicultural effectiveness monitoring program. Assess all natural and artificial regeneration at specified times. **Target:** • Assess at least 6,000 ha/yr for silvicultural effectiveness during the term of the 2004 FMP.	NFRM has developed an excellent information system to support silvicultural effectiveness monitoring, which is integrated with their harvest and silvicultural tracking and inventory update functions. In 2004, 3,894 ha of free-to-grow surveys were reported. Additional area was surveyed by NFRM for various silvicultural effectiveness monitoring purposes (this area is not included in the Annual Report).	The objective to develop a comprehensive silvicultural effectiveness monitoring program has been met, and testing and refinement of the system is ongoing. With only one year of information being available, it is too early in the plan term to assess progress in meeting the five-year area objective for silvicultural effectiveness monitoring.

3.7.2 Review of Year Ten Annual Report Assessment of Sustainability

The Year Ten Annual Report was prepared for the year 2003/04. This was the first year for which Ten-Year Annual Reports were required, and it was a transition year. The report author was hampered in preparing a number of the tables related to sustainability assessment because previous plans and reporting had not required the calculation and presentation of data that are to be used in sustainability assessment. Nevertheless, the report author used what information was available to draw conclusions regarding the sustainability of forest management.

The report reviewed the change in managed Crown forest area, landscape pattern indices, wildlife habitat, forest productivity and percentage of the AHA actually used. The landscape pattern indices and productivity values were only available for 2004 and there was little insight provided from these measures into the sustainability of forest management. Changes in wildlife habitat are difficult to assess due to changes in the habitat templates, ecosite determination procedures, and inventory modifications. Wildlife habitat has been discussed at length in this report in section 3.3.7

The managed Crown forest area declined between 1999 and 2004 from 559,507 ha to 538,970 ha (Table RPFO-14), largely due to the withdrawal of 33,200 ha for parks and reserves under Ontario's Living Legacy. The percentage of the AHA that has been harvested crept up to its current level of 50% (in the 1999 FMP period), but this is still low. This issue is discussed more fully in 3.3.6.

Based on this, and an assessment of the achievement of the objectives in the 1999 FMP, the Ten-Year AR concludes that the Nipissing Forest has and continues to be managed sustainably. The analysis of sustainability, and the conclusions, in the Ten-Year AR is almost identical to that in the Trend Analysis prepared in association with this IFA and included as Appendix A of this report.

3.7.3 Review of Trend Analysis

The IFAPP requires that this assessment of sustainability review the Comparison and Trend Analysis of Planned versus Actual Forest Operations Report (hereafter called the Trend Analysis), which is included as Appendix A of this report. The Trend Analysis is prepared by the SFL holder and is intended to identify significant trends in the management of the Forest. The Trend Analysis for this audit was prepared in accordance with the requirements of the IFAPP.

A draft version of the Trend Analysis was reviewed by the Audit Team and comments were supplied to the SFL holder. The version attached to this report was submitted to the Audit Team in response to the comments provided.

The Company invested considerable effort in developing the Trend Analysis, exceeding the requirements of the IFAPP. The Company integrated data and information from 6 plans, extending back 16 years into the analysis:

- 1990 to 1995 Timber Management Plans for the Nipissing, Ottawa River and Sturgeon River Crown Management Units. These three units would eventually

form the Nipissing Forest. As the units were managed by the Crown at the time, these plans were written by MNR North Bay District staff.
- The 1994 to 1999 Timber Management Plan for the North Bay Crown Management Unit. The three Crown Management Units in the District were amalgamated to form this Forest
- The 1999 to 2004 FMP for the Nipissing Forest. This was the first plan written by NFRM for the Nipissing Forest SFL
- The present 2004 to 2009 FMP.

NFRM staff believe the silviculture data for the 1990-94 period may contain errors as it has some illogical entries, and so it is not used in this assessment.

There is considerable overlap in the data presented and the conclusions reached between the Trend Analysis and the Year Ten Annual Report, which is reviewed above. Some slight variations in numbers occur in the two documents, but the trends regarding forest area composition and harvest levels achieved are the same.

Forest Area and Composition

Table 1 and the associated text of the Trend Analysis describe changes in the forest area and composition of the forest. The most significant changes in the forest from the 1990 plan period to the beginning of the 2004 plan period have been:

1. The total forested area available for timber production has decreased by approximately 36,000 ha from approx. 680,000 ha to approx. 644,000 ha. This is attributed primarily to the creation of new parks and other protected areas created in the Living Legacy initiative of the late 1990's.
2. The total production forest area has remained relatively stable, increasing by 2,000 ha from 1990 to 2004. The relative stability of the amount of production forest in spite of decreases in available forest is due to reclassification of B&S and protection forest areas – decreasing their abundance and increasing the abundance of the production forest.
3. As noted above, the area of both B&S/NSR and protection forest decreased. B&S/NSR forest lands decreased from approx. 60,000 ha in 1990 to approx. 19,000 ha at the start of the 2004 plan. The area of protection forest decreased from approx. 37,000 ha to 4,000 ha over the same period. These decreases are attributed to improved classification of forest lands with the inventory prepared for the 1999 FMP.
4. Increases in the red and white pine working groups from approximately 52,000 ha in 1990 to approx. 78,000 ha in 2004. This increase is attributed to increased efforts to plant more of these species on sites where they occurred prior to European settlement
5. Relative stability of other forest units. Although there have been changes in the areas of working groups on the forest, taken as ecological associations, there seems to have been relative stability in the areas of tolerant hardwoods, intolerant hardwoods, and other conifers.

The Audit Team finds none of these changes to be of concern. Overall the relative stability of production forest area in spite of decreases in total available forest is reflective of a more refined inventory process. The increase in pine forests is indicative of the relative success of one of the forest managers key objectives.

Harvest

The Trend Analysis discusses harvest volumes and areas on the Forest in Tables 3 and 4 and the related text. The Trend Analysis identifies the same concerns which are discussed in several places in this report. In recent years, the harvest volume and area on the Nipissing Forest has been substantially less than that planned. For the plan periods 1994-1999, 1999-2004, and for the single year for which data are available from the 2004 FMP, the proportion of the planned volume which has been harvested from the Forest has been 52.7%, 56.5%, and 55.6% respectively, for all species combined. (For the 1990-94 plan period the volume harvested exceeded that planned by about 68%; this appears to have been due to significant yield underestimates during that period.) The lower-than-planned harvest volumes for the forest as a whole over the last decade are all the more striking in light of the fact that the volume achievements for red and white pine have exceeded those planned in every management plan period.

The area harvested has also been considerably less than that planned on the forest. For the plan periods included in the Trend Analysis, the area harvested relative to that planned for all forest units combined has been 41.6% (1990-94), 58.5% (1994-1999), 50.7% (1999-2004), and 39% (for the first year of the 2004-2009 plan period). The underharvest has been least for the mid-tolerant conifer forest units (PWUS, PWST, and HE) for which the area harvested relative to that planned has been 67.8%, 98.5%, 71.6% and 65.8% respectively for the four plan periods. The area harvested for the other forest units has been considerably less than planned for all plan terms.

The Trend Analysis attributes the underharvest on the Forest to poor market conditions, primarily a consistent absence of markets for hardwood pulp from both tolerant and intolerant species, and the softwood lumber dispute with the United States, which contributed significantly to a poor market for SPF sawlogs.

This consistent underharvest of the Forest, both in terms of area and volume is the most vexing aspect of management of the Forest. Although the circumstances which have resulted in the underharvests are reflective of the economic conditions at work in a sphere far beyond the Nipissing Forest, there are aspects of management of the forest which should become more attuned to these situations. This is discussed at length in Section 3.4.2 of this report.

Silviculture

As there are uncertainties about the quality of the silviculture data for the 1990-94 period, this review will focus on the 1994-1999 and 1999-2004 plan periods. Notable changes from the first of these two periods to the second are that more planting has been both planned and accomplished, and much more tending undertaken. Site preparation has also increased, but not in relation to the amount actually planned.

The Trend Analysis report attributes the increases in area planted to the greater stability of funding associated with the implementation of the Forest Renewal Trust, and the fact the management of the forest is working towards pine restoration as one of its key objectives.

The increase in tending is due to uneven-aged stand improvement work and yellow birch restoration project undertaken in the 1999 plan period, and continuing into the present plan period. Both of these initiatives are discussed at length in 3.4.4 of this report, and a

Best Practice was given to the Company's efforts related to these endeavours.

Table 6 of the Trend Analysis shows that some of the silvicultural accomplishments have been significantly less than those planned. However, as explained in Section 3.4.3 of this report, and illustrated in Table 8, the accomplishments have actually been in-line with those planned, once they are pro-rated to take into account the lower-than-planned harvest levels. Trends in the company's silviculture efforts indicate stability in some aspects of their undertakings and significant advances related to stand improvement.

3.7.4 Conclusions Regarding Sustainability

The Audit Team's conclusions regarding sustainability have attempted to take several factors into account. Portions of the reviews in Sections 3.7.1 – 3.7.3 contribute to the assessment, but not all aspects of these sections are equally relevant. In addition to the information presented in the above sections, the Audit Team draws heavily upon the following to base its conclusions regarding sustainability:

- Adherence to the required forest management guides and manuals;
- The harvest and regeneration are in balance and there is no overharvesting on the Forest, judging from the available data and observations made during our site inspection;
- The fulfillment of the goals and objectives of the 1999 FMP (with the caveat that some of the non-quantitative objectives were difficult to assess);
- The existence and implementation of well-considered AOC prescriptions which protect the non-timber values of the forest;
- Concerted and successful efforts on the part of the company to protect the interests of the tourism industry through the use of Resource Stewardship Agreements;
- The efforts made by the company and MNR to foster the economic interests of First Nations on the Forest;
- Adherence to the conditions of the SFL;
- The existence of a functional and committed LCC; and
- The very high level of commitment and professionalism demonstrated by the company and its staff.

In addition to the review of the information in Sections 3.7.1 – 3.7.3, the Audit Team has also interviewed many people associated with the Forest, spent two days viewing the results of operations on the Forest, and gained a great deal of insight into the management issues of the Forest and the performance of Company and Ministry staff.

Based on the above considerations and the material presented throughout this report, we conclude that the Nipissing Forest is being managed within the bounds of sustainability as defined by the MNR and as outlined in the IFAPP.

Notwithstanding the above positive assessment, the Audit Team has identified a number of concerns with the management of the Forest. The issues of most concern related to the integration of the volume commitments and harvest planning on the Forest and the implications of planning to those levels of commitments, many of which are not fulfilled. As is illustrated in the Trend Analysis, and discussed in Section 3.7.1, the actual harvest levels on the Forest have not come close to meeting the planned levels as far back as 1990. Underharvest is not necessarily bad for the Forest, as the harvest levels are dictated by economic conditions and market demand, the key issue is that important aspects of management plans developed for the Forest become moot due to the vast difference between the planned and actual management. The Forest, and the interests of those who use it and depend upon it would likely be better served by a management plan which presented a realistic vision of the likely harvest levels, or one that incorporated the likelihood of harvest levels below the calculated AHA. As the planned harvest levels are required to incorporate the volume commitments the Audit Team believes that the volume commitments need adjustment and has made several recommendations related to this.

3.8 CONTRACTUAL OBLIGATIONS

3.8.1 Payments of Crown Timber Charges

A request was submitted to Corporate MNR to search the Crown charges database to determine whether all licensees were up to date in their payments of Crown charges, including dues and payments to the Forest Renewal Trust Fund. One Company was identified as owing a considerable sum, but this was related to issues involving other parties and was to be rectified in short order. Considering that this Company had a very good record of payment, the audit team is satisfied that the situation is in hand.

3.8.2 Forest Renewal Trust

During the audit period, the required minimum balance of the Forest Renewal Trust (FRT) for the Nipissing Forest was not in place for two of the five years (March 31, 2003, and March 31, 2004). The overspending of the FRT for these two years was due to lower-than-expected revenues because of reduced harvest levels, in combination with significant financial commitments of NFRM for shared funding of stand improvement projects. NFRM placed a high level of importance on these projects and viewed their implementation as essential to the long-term sustainability of the forest. Immediately after the first occurrence of the FRT shortfall, in 2004, NFRM developed a two-year plan to restore the FRT minimum balance, which was approved by MNR. As of March 31, 2006, the minimum balance (plus a surplus) had been restored. As the measures taken were reasonable and effective, and because measures have been put in place to ensure that the chance of a recurrence is minimal, we believe that a recommendation to address this issue is not required.

NFRM conducted annual reviews of the renewal rates with the MNR, as required by the licence document for the Nipissing Forest. During the audit period, only one change to the rates was made. The renewal rate for Cedar and Hemlock was reduced to encourage utilization of these species. (However, as Recommendation # 12 identifies, the Audit Team believes these species would be better used for non-timber purposes).

We reviewed the Company's records for items invoiced to the Forest Renewal Trust for the period April 1, 2001 to March 31, 2006. All expenses were found to be eligible and appropriate as per the requirements of the Renewal Trust Agreement. The Company maintains well-organized records of the silvicultural expenses, and maps of the treatment projects as required by the licence.

3.8.3 Forestry Futures Trust

During the audit period, two projects were funded through the Forestry Futures Trust. These were multi-year projects for 1) stand improvement of degraded tolerant hardwood forests in the Loring Deer Yard, and 2) yellow birch restoration. We verified the treatments for both these projects in the field, and found that the implementation was of good quality. Financial records related to the Forestry Futures Trust for the Nipissing Forest were reviewed and were found to be in good order. As for the Forest Renewal Trust, the Company maintains good records and maps of the projects. All project reports had been submitted by the Company to the Forestry Futures Trust as required, and these were of good quality.

3.8.4 Wood Supply Commitments

The 2002 SFL contains wood supply commitments to Grant Forest Products Inc. (Englehart) and St. Marys Paper (Sault Ste. Marie) in Appendix E. A subsequent version of the licence, in effect from June 2003 or afterwards (based on the date of the last amendment), contains additional wood supply commitments to Columbia Forest Products (Rutherglen), Tembec (Temiskaming and Mattawa), and Precut Hardwood (North Bay). In total, under the requirements listed in the SFL, almost 50% of the planned annual harvest volume (762,000 m3) is directed to various wood supply commitments.

Table 13. Volume commitments lientified in the SFL.

Company	Mill Location	Wood Type	Commitment Volume (m3/yr)
Grant Forest Products Inc.	Englehart	Aspen - non-veneer	97,967
St. Marys Paper Ltd	Sault Ste. Marie	conifer	48,000
Columbia Forest Products	Rutherglen	Tol Hwd, Bw veneer	8,900
Tembec Industries Inc.	Temiskaming	Tol Hwd - Pulp	41,600
Tembec Industries Inc.	Temiskaming	Bw - Pulp	46,000
Tembec Industries Inc.	Mattawa	Tol Hwd - sawlog	19,950
Tembec Industries Inc.	Mattawa	Pr, Pw - sawlog	22,800
Tembec Industries Inc.	Mattawa	Spr, Pj, B - sawlog	41,400
Tembec Industries Inc.	Mattawa	Bw - sawlog	25,900
Precut Hardwood Inc.	North Bay	Low quality Bw	16,000
TOTAL			**368,517**

The 2004 FMP identifies the commitments from the Nipissing Forest, as shown in Table 13, but the accounting shown in the plan also includes an increase in the commitment to Grant Forest Products, which would raise the commitment to that mill from 97,967 m3/year to 150,000 m3/year. A letter dated June 6, 2002, from the MNR North Bay District Manager to the Company planner, identified the increase to Grant's commitment and the commitment to Precut Hardwood as "additional commitments that were likely to be formalized during the term of the new FMP". These commitments were portrayed in the 2004 FMP as completed agreements and subsequently the commitment to Precut Hardwood Inc. was finalized, however the increase in Grant's commitment has not.

The Audit Team observes that the conditions in the SFL provide the legal basis for the SFL holder to recognize wood supply commitments. While it may be prudent for the FMP planning team to consider potential new commitments that are in advanced stages of discussion and might be finalized during the FMP period, the Audit Team does not feel it is appropriate for the planning team to portray hypothetical commitments as legally-binding ones. The conditional commitment to Grant is used as a constraint in the SFMM analysis, but it was discovered that the commitment could not be met past the first time period without undue negative effects. In response, the constraint was lowered to 135,000 m3/year, which became binding after 20 years. The conditional constraint was also part of the basis for forecasting wood utilization by mill (FMP-27).

There are two inter-related issues here – the treatment of potential wood supply commitments as if they were legal requirements in planning, and the scope within the existing wood supply framework for accommodating additional commitments. The latter issue has been discussed in Section 3.3.6 and recommendations were made there. Recommendation # 29 is intended to address the first issue.

Recommendation # 29

The 2009 Planning Team should model wood supply based on wood supply commitments that have been finalized or are in advanced stages of completion.

An additional issue arose regarding the wood supply commitment to St. Marys Paper Ltd. Achievement of this commitment has been complicated by the lack of clarity regarding the Minister's intention. Appendix E of the SFL states that the Minister wishes NFRM and St. Marys to enter into a long-term Memorandum of Agreement (MOA) based on the commitment letter, but the intended wood exchange mechanism was described in an ambiguous manner. While the Company has made sincere efforts to conclude a MOA with St. Marys, the lack of clarity regarding the exchange mechanism is blocking progress towards a signed agreement. In an effort to facilitate the companies' efforts to reach an MOA, the District MNR staff have made a number of requests to the Corporate levels of the Ministry over the past few years for an interpretation of the text of the commitment letter, but have not received clarification.

Recommendation # 30

Corporate /Regional MNR should clarify the intended wood exchange terms of the wood supply commitment made to St. Marys Paper made in a letter to Mr. Ronald Stern, CEO Belgravia Investments Ltd., dated Dec. 15, 1998.

3.8.5 Specified Procedures Field Assessment

We conducted field assessments on 915 ha, or approximately 37% of all tree planting, site preparation, and tending treatments that were invoiced to the Forest Renewal Trust for the year 2004-2005. We also reviewed 861 ha of areas that had been surveyed for free-to-grow status, or 22% of the total surveyed area reported for the year 2004/05. In all cases the treatments were in place as mapped in the annual reports, were appropriate for the site conditions, and had been implemented to a good standard of quality. Free-to-grow assessment results provided by the Company conformed well to our observations of inventory attributes on these sites and the free-to-grow status of these sites was confirmed.

The Specified Procedures report for the Nipissing Forest, which was prepared by KPMG, identified a number of vague items and minor errors related to invoices to the Forest Renewal Trust for the Nipissing Forest for the 2004/05 fiscal year. We investigated these items and found that all of the indicated items were eligible and appropriate. One error in the final invoice report for the 2004/05 year, a difference of 100.2 ha in site preparation activities, proved to be a typographical error in transcribing areas to the 2004/05 Annual Report, which was carried over to the FRT Final Invoice Report. However, the correct amount of area had been invoiced to the FRT, and NFRM has indicated that the Annual Report will be amended to show the corrected area.

3.8.6 X,Y, and Z Lands

The designation of X,Y, and Z lands refers to areas which were in various states of regeneration and post-harvest treatment when the Forest was transferred from Crown management to an SFL. As part of the SFL agreement, the company has responsibilities for ensuring that these lands are returned to productive forest.

There are currently 44,059 ha of X, Y and Z lands on the Nipissing Forest. The Company maintains excellent records of the status of these lands. Records indicate that 16,933 ha are currently free-to-grow, 12,510 ha of lands which are being managed under the clearcut system are in the process of being treated to bring them to the free-to-grow stage, 9,739 ha are undergoing treatment at various stages of the shelterwood system, and the remaining 4,877 ha are being managed under the selection system. The X, Y, and Z lands are mapped in a separate layer in NFRM's GIS system, and treatments are scheduled and implemented as required, along with normal silvicultural operations. Field assessments of a sample of these areas indicated that the treatments and/or surveys were being conducted to a good standard of quality.

3.8.7 Inventory and Monitoring Obligations

During the first four years of the audit period (2001/02 to 2004/05), free-to-grow surveys were conducted by NFRM on an area totalling 17,067 ha. Information of free-to-grow surveys is not yet available form the final year of the audit period (2005/06) but the Company estimated the additional area as approximately 2,700 ha, for a total of 19,767 ha surveyed. As discussed previously, NFRM has done a good job of keeping up with their free-to-grow survey obligations and the inventory update process is kept up-to-date. The Company has also implemented a good silvicultural effectiveness monitoring program which will identify any areas requiring further treatments prior to the free-to-grow stage.

3.8.8 First Nations Participation

Section 20 of the SFL directs the Company to work co-operatively with the Ministry and local Aboriginal Communities "in order to identify and implement ways to achieve a more equal participation by Aboriginal Communities in the benefits provided through forest management planning." As discussed in Section 3.2.3 and elsewhere in this report, the Audit Team believes the Company has done a commendable job in working with

Aboriginal Communities and so concludes that this aspect of the Licence is being met.

3.8.9 Pest Management

NFRM is meeting their obligations with respect to pest control. NFRM provides in-kind support to the Canadian Forest Service, Forest Health Monitoring Unit, and the MNR's Forest Health Branch in their conduct of insect pest surveys, and has supported additional research activities of the Canadian Forest Service on the Nipissing Forest. In the year 2002, NFRM completed an 8 ha ground insecticide application of Malathion, conducted by Sturgeon Falls Brush Spraying and Cutting using backpack sprayers. The pesticide was applied to control Red-Headed Pine Sawflies in a red pine plantation in Widdifield Township. This instance was the only use of insecticides during the audit period.

3.8.10 Previous Independent Forest Audit

The previous audit for the Nipissing Forest was conducted in 2001, with the final report submitted in late April of 2002. The action plan for addressing the audit's recommendations was due in June of 2002, two months after the report was submitted. The action plan was submitted by the Company and local MNR in January and March of 2003 respectively and approved by MNR's Forest Division and Field Services Division in May of 2003. The status report on implementation of the action plan was due in the spring of 2005, two years after approval of the action plan. The status report was received by MNR's Forest Management Branch in March of 2005. Therefore, the action plan was developed and approved behind schedule, but the status report was submitted on schedule.

The 2005 IFAPP notes that action plans are due two months after receipt of the final audit report. Because the action plan for the last audit was delivered several months late, we have identified a recommendation that the action plan for this audit be produced on schedule.

Recommendation # 31

The Company and MNR should ensure that the action plan developed to address this audit's findings is produced according to the schedule identified in the 2005 IFAPP.

Table 14 identifies the status of the recommendations and suggestions made in the previous IFA.

Table 14. Review of the implementation of recommendations made in the 1996-2001 Independent Forest Audit of the Nipissing Forest.

Recommendation/Suggestion	Actions Taken	Status
Recommendations		
1. The Ministry of Natural Resources should assist the LCC in improving its communication to the public and in preparing progress reports related to its function as required by the FMPM.	During the five-year audit period, the LCC produced one newsletter (which we were informed was actually written by the MNR). The LCC report produced as supplementary documentation to the 2004 report was authored by one of the committee's members, but was not vetted by the committee as a whole. Therefore, it appears that the efforts of the committee to communicate its activities are still not meeting the direction of the FMPM, nor have they satisfied the intent of the previous audit's recommendation. Recommendation # 4 is intended to address this.	Not Complete Recommendation # 4 of this audit is intended to address the lack of progress on this item.
2. MNR should modify the forest management planning process to encourage the evaluation of meaningful management alternatives	The 1996 FMPM upon which the recommendation was based has been replaced by a new (2004) FMPM. The approach to evaluating management alternatives has changed significantly in the 2004 FMPM, so that the process is more iterative and less onerous than the process which existed in the 1996 FMPM. This new process should encourage the evaluation of meaningful management alternatives.	Complete
3. The company should include a report on the compliance monitoring of exceptions to the Silvicultural Guides in subsequent annual reports.	Full-tree harvesting on shelterwood regeneration cuts, an exception to the silvicultural guides, was a proposed treatment for the 1999 and 2004 FMP terms. NFRM worked with MNR and the Forestry Research Partnership to develop a good monitoring plan. Monitoring was conducted on all blocks where the treatment was implemented, and a report on the analysis of the monitoring data was prepared. The AWS for each year identifies the proposed blocks where the treatment was to be applied, and annual compliance plans identify the monitoring schedule. The final Annual Report for the 1999 FMP term briefly describes the monitoring program and references these documents.	Complete
4. The MNR should commit to conducting fish and wildlife surveys in support of forest management in the Terms of Reference for the 2004 FMP and by including a strategy and objectives for fish and wildlife surveys in the 2004 FMP.	Section 3.3.6 of this report discusses the MNR's attempts to deal with this recommendation. Basically efforts to develop a water-body identification protocol have developed slowly, so that much remains to be done. Efforts to address the lack of information for MAFAs have been more successful	Partially complete. Recommendation # 18 of this audit directs the MNR to continue efforts to deal with waterbody classification.
5. The Ministry should conduct appropriate fish and wildlife surveys and inventories	See discussion above	See discussion above

Recommendation/Suggestion	Actions Taken	Status
throughout the implementation of the 1999 FMP.		
6. NFRM and the MNR should review the reasons which caused so many amendments and revisions to be necessary and identify means to reduce their number in the future where possible.	The 2004 FMP included supplementary documentation, which indicated the planning team implemented the 2001 IFA recommendation to reduce amendments by conducting a through a review of 1996-01 amendment, increased planning for tertiary roads, and investigating ways to reduce AOC amendments by increasing AOC flexibility. This audit found the number of amendments and revisions to be reasonable.	Complete
7. NFRM and the MNR should develop a comprehensive strategy for the management of low quality hardwoods for inclusion in the 2004 FMP.	Main response to this recommendation was to consider how to increase utilization. A Utilization and Compliance Task Team met five times between July 2002 and August 2003 and thoroughly reviewed the supply, demand and any impediments to utilization for the components of the wood supply. No major recommendations were identified that would make a significant increase in utilization. The hope is that FSC certification will drive up demand for low quality wood. The audit team considers the causes of low utilization to be beyond the scope of the Company to remedy; gradual increases in stand quality will take decades to reach a significant level that will improve utilization.	A considerable effort was devoted to increasing utilization, which was not exactly what the recommendation intended. Recommendations 9 – 11 direct the MNR to develop better means of setting and managing wood supply commitments on the forest.
8. NFRM should develop and implement a program of hardwood slash management.	The Company has improved its management of slash, updating its FOPs and slash pile burning procedures to cover hardwood slash.	Steps taken and improvement noted; room for further progress.
9. NFRM should develop and implement a plan to minimize the occurrence of rutting on the Nipissing Forest.	The 2004 FMP includes a strategy to "reduce site and stand damage, such as compaction, rutting, soil erosion, damage to residual trees, advanced regeneration and understory plants, by ensuring that all operators adhere to NFRM's standard operating procedures for reducing site and stand damage". Annual compliance plans describe the annual training program to be undertaken for operators in this regard. NFRM adopted the standards in the conifer silviculture guide (Tables 10.0.2 and 10.0.3 in the guide are examples) for assessing compliance. In 2002-2003, NFRM implemented a voluntary shut-down of operations during a wet period where the risk was high. Our observations during the field assessment indicated that NFRM has done an excellent job of minimizing the incidence of site and stand damage on the Nipissing Forest.	Complete
10. NFRM should ensure that	Strategic aspects of tertiary road management are	Mostly complete

Recommendation/Suggestion	Actions Taken	Status
the access strategy in the 2004 FMP includes thorough consideration of tertiary roads and the roles they play in the Nipissing Forest.	taken into account in several ways in the 2004 FMP: • New road definitions recognize old logging roads as a management class, and the definition of secondary road has been expanded to capture some of the functionality of old tertiary roads • Tertiary road restrictions figure into EMA strategies • Completion of the roads and watercrossings inventory management strategy is expected for the forest prior to the next FMP	Recommendation # 25 directs the MNR to ensure that adequate funding is available to complete the roads and watercrossings inventory
11. MNR should revise the access road planning and reporting requirements to recognize the role and nature of tertiary roads in the GLSL forest.	In the 2004 FMPM "branch" roads are recognized as roads which provide access to and through areas of operations. Roads formerly called tertiary could fall into this category depending on their intended use. The planning requirements for branch roads are more comprehensive than for former tertiary roads and address the concerns raised in the audit.	Complete
12. NFRM should review water crossing construction and maintenance procedures on the roads built and/or maintained for forest management and develop measures to ensure that all construction standards are met and environmental concerns accommodated.	The company held a watercrossing construction and maintenance course in 2003, and had good attendance from its overlapping licensees. No issues regarding watercrossings were noted during this audit.	Complete
13. The Ministry and NFRM should continue efforts to develop a common understanding of compliance-related definitions and benchmarks, and appropriate monitoring intensities for the Nipissing Forest.	MNR has recently hired Forestry Technical Specialist responsible for compliance and silvicultural effectiveness. This individual will help direct the MNR compliance inspectors and resolve conflicts with the NFRM and an individual compliance inspector or inspection. Regular joint NFRM and MNR compliance meetings are held to discuss compliance issues.	Complete
14. NFRM should review the level of training provided to operators on the forest and ensure that all operators receive regular and appropriate training so as to avoid non-compliance issues.	NFRM holds annual compliance meetings with all operators and the MNR to review the compliance program and implementation of the AWS. Any new forest management issues are discussed or presented. This meeting is also used to define the operator training needs and schedule training sessions. NFRM has obtained funding to help train operators.	Complete
15. NFRM should assist shareholders and independent operators in developing the capacity to undertake appropriate levels of compliance monitoring.	All shareholders have staff who have completed the compliance inspector training certification, however independent operators have not been trained. All shareholders and independent operators attend the annual compliance meetings where training is provided.	Partially complete; NFRM has indicated that it will continue to work with low-volume operators to develop

Recommendation/Suggestion	Actions Taken	Status
		improved understanding of compliance responsibilities.
16. NFRM and the MNR should give special attention to monitoring the compliance of Goulard Lumber (1971) to ensure that this company adheres to required performance standards and the terms of its Forest Resource Licenses.	Goulard Lumber hired a full-time supervisor to oversee operations. The company has received no fines or penalties or work orders related to compliance in the last five years. The MNR reports that there have been no noteworthy compliance issues related to this company's performance.	Complete
17. The MNR should act as a facilitator for discussions between NFRM and the Ministry of Labour aimed at promoting active snag management.	The Ministry of Labour was not engaged in discussions regarding snag management, however this audit did not find the same issue regarding snag retention as the previous one, so the matter is considered closed.	Although the recommendation was not implemented, the concern no longer exists.
18. NFRM should complete analyses of the available Free-to-grow information to assess the effectiveness of silvicultural prescriptions for both treated and untreated areas. These results should be used, where appropriate, in the preparation of the 2004-2009 FMP.	Analysis of the free-to-grow information was completed, and the results were used in the 2004 FMP for the revision of SGRs, the identification of preferred silvicultural prescriptions, for those forest units where sufficient data were available to show trends for the most effective treatments, and for the review and revision of the managed successional pathways used in the modeling, where appropriate. NFRM has developed an excellent information system for tracking silvicultural effectiveness and completes considerable monitoring on an annual basis.	Complete

3.8.11 Licence Extension

The SFL for the Nipissing Forest requires that an independent review team conduct a review of the Company's compliance with the terms and conditions of the licence for the period April 1, 2001 to March 31, 2006 and recommend to the Minister whether the term of the licence should be extended for five years. This audit satisfies the licence requirement.

The Audit Team believes that management of the Nipissing Forest was in substantial compliance with the laws, licences and Forest Management Plans in effect during the audit period. The Nipissing Forest is being managed within the bounds of sustainability as defined and directed by the Ministry of Natural Resources.

Recommendation # 32

The Minster of Natural Resources should extend the Sustainable Forest Licence held by Nipissing Forest Resource Management Inc. for the Nipissing Forest (Licence No. 542053) for a further five year period.

4 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

This audit reviewed the management of the Nipissing Forest for the period April 1, 2001 to March 31, 2006. The review included examination of the content of the 1999 FMP and the 2004 FMP, and implementation of management of the Forest for the last three years of the term of the 1999 FMP and the first two years of the term of the 2004 FMP.

This audit makes 32 recommendations (one of which is to extend the licence) and 7 suggestions (Table 15) and identifies several best practices. Although not all recommendations and suggestions are of equal importance, an examination of where they occur in this audit report provides a good depiction of the Audit Team's impressions of management of the Forest. Of the 32 recommendations, only 3 related to plan implementation, confirming that the Audit Team had favourable impressions of the field operations inspected. Similarly, the fact that 17 of the recommendations related to the planning principle of the IFAPP reveals that the Audit Team believes that there are a number of opportunities for improvement in aspects of planning for the Forest.

As noted earlier in this report, the purview of this audit included examination of the extent to which both NFRM and the Ministry of Natural Resources have fulfilled their forest management responsibilities and obligations. This is evident in the fact that the findings of this audit include 10 recommendations which direct the MNR and the Company to act in concert, and another 9 directed at Corporate MNR.

Some of the key aspects of forest management which feature prominently in this audit are reviewed below.

The Local Citizens Committee

The LCC works well together. It seems there are opportunities to improve, although most are relatively minor in comparison to the positive attributes of the Committee. Nonetheless the improvements included in the suggestions and recommendations of this report should be addressed to ensure the Committee's effectiveness. Two components of this audits review of the LCC stand out. The first is that the LCC has yet to embrace its mandate of communication with the public. This aspect of the LCC's performance was noted in the last IFA, and it seems that the need has not been acted upon effectively in the period between the two audits, and so another recommendation is made. The second component is that the Audit Team believes that the MNR should consider expanding the role of the LCC related to forest management by providing it with increased opportunities for input into the planning and management processes. This is not a requirement of the forest management planning process and the Audit Team recognizes that such a decision should be at the discretion of the MNR, and so it is provided as a suggestion rather than a recommendation.

First Nations

The integration of First Nations' interests in forest management has a couple of distinct aspects on this Forest. First, there is a desire of the First Nations to increase their opportunities related to Forest Management, and this is understandable given their connection with the Forest and desire to capture more of the benefits of commercial forest management. Second, there exists a good record of performance on the part of the MNR and the Company in providing opportunities to First Nations. These include:

- increasing the First Nations share of the harvest allocations on the forest from 5.6 to 8.0% in recent years;
- providing good employment opportunities for First Nations members through some large-scale stand improvement projects undertaken on the Forest; and
- fostering and participating in the Aboriginal Working Group which functions effectively as a means of information exchange and discourse between the forest industry, the MNR and the area's First Nations.

So although there is an understandable desire on the part of the area's First Nations to increase their economic benefits from the forest, this audit found that the Company and the MNR have made very commendable progress and results in working towards this.

Planning and Harvest Levels

Probably the most challenging issues the audit dealt with concern the wood supply commitments on the forest and the relatively underachievement of planned harvest levels. The Nipissing Forest has a history (at least as far back as the 1990 plans for the Forest's predecessor Crown Management Units) of underachieving its planned harvest levels. In many cases (i.e. for several forest units, and for many years) the underachievement has been quite large (30% or more). This audit does not find fault with the Company or the MNR for the relatively low level of harvesting which has occurred. The harvest achievements have been driven by economic factors beyond the control of the Company and the MNR. The harvesting levels have been matched by appropriate levels of silviculture, so there is not a direct sustainability issue associated with the harvest levels. Planned harvest levels continue to exceed those levels likely to be harvested at least partly because of commitments which exist for the Forest's wood. Plans are obligatorily written to fulfil the commitments and therefore, the important aspects of plans are not achieved and management deviates from that identified in the otherwise very well-considered plans. Options for other management scenarios are stymied to some extent by the need to plan to the commitment levels. Several recommendations are directed at the MNR to address this situation.

Forest Operations

Operations on the Forest were found to be of high quality. The quality of harvesting operations was good and there were no serious issues regarding renewal.
On a few sites inspected by the Audit Team the quality of planting stock, especially red pine and white spruce, appeared to be poor. Some of the stock was quite small and was growing poorly and experiencing mortality, especially on more competitive sites. NFRM was aware of the problems with the stock and was planning to monitor its performance, and schedule remedial treatments where necessary.

The Audit Team also observed that the regeneration on some sites could have benefited from site preparation, and that some sites were suffering from a high level of competition and could have benefited from tending. These observations led to two recommendations directing the Company to refine the means by which it makes decisions regarding site preparation and tending. These recommendations are intended to reinforce the direction in which the Company seems heading under the guidance of its recently-hired silvicultural forester.

Old Growth and Wildlife

The Audit Team believes that the management of wildlife habitat and old growth on the forest are in need of improved direction from Corporate MNR. Future projections for the forest indicate that it will rely heavily on the contribution of parks and protected areas to meet the old growth objectives. The Audit Team believes that improved guidance needs to be provided regarding the level of contribution from protected areas that is appropriate to contribute to old growth targets. For wildlife habitat, the 2004 FMP, as is the case with plans for many other forests, permits declines of an extent to which the audit team believes is unwise. The level of permitted decline in wildlife habitat is not well rationalized by Corporate MNR. The Audit Team believes that Corporate MNR should revise the direction provided to planning teams which permits broad and extensive declines in wildlife habitat.

Compliance and Monitoring

The company's compliance performance and monitoring system are both good. Although non-compliances do occur in management operations, there are no patterns which indicate systemic issues or an unreasonable level of transgressions. MNR's compliance monitoring efforts are implemented by very qualified individuals, however the Audit Team believes that a lack of compliance funding hinders the MNR's ability to undertake compliance activities consistent with its mandate. A recommendation to Corporate MNR to increase the level of compliance funding is made.

Table 15. Recommendations and suggestions made in this audit.

Principle: Commitment

No Recommendations or Suggestions.

Principle: Public Participation

Suggestions:

1. During the process of recruiting more members for the LCC, efforts should be made to address the committee's gender imbalance.
2. The MNR and LCC should amend the committee's terms of reference to identify a quorum for meetings and decision-making.
3. The MNR should consider expanding the role of the LCC related to forest management by providing the committee with increased opportunities for input into the implementation and monitoring of the planning and management processes.

Recommendations:

1. The MNR, with assistance from the LCC, should attempt to recruit new members so that the committee has representation from a broader range of interests.
2. The MNR District Manager should attend more LCC meetings.
3. The MNR and LCC should review the training needs of the committee's members, and identify measures to ensure that they are provided with training experiences and materials on an on-going basis.

4. The MNR and LCC should work together in improving the committee's communication to the public so that the committee can better serve this aspect of its intended role.
5. The MNR, with input from the Aboriginal Working Group, should identify appropriate levels of funding to undertake/ complete values identification and reports for the next FMP. Corporate MNR should provide sufficient resources to adequately document Native values on the Forest.
6. A complete record of all public consultation including all ads and mail outs, should be kept with both MNR and SFL versions of AWSs, FMPs and amendments.

Principle: Forest Management Planning

Suggestions:

4. The MNR, in consultation with the Company, should commence planning for the next FRI update for the Nipissing Forest.
5. NFRM and the MNR should examine the projected spatial distribution of old growth areas as identified in the Old Growth Strategy for the 2004 FMP. The next FMP should provide an ecological rationalization for the projected spatial distribution of old growth in the Forest, and if ecologically desirable, provide for a more equitable contribution of the managed forest to old growth areas in the Forest.
6. MNR and NFRM should maintain records that clearly indicate when operations commence each year.

Recommendations:

7. The planning team for the 2009 FMP should ensure that the draft harvest areas are available early enough in the planning process to allow for spatial habitat assessments to be incorporated into the final allocations.
8. The Planning Team for the 2009 FMP should ensure that the plan's description of wildlife and the historic forest meets the requirements of the FMPM.
9. Corporate MNR, in consultation with NFRM, should review and revise the wood supply allocation mechanisms, associated licence conditions, and supply commitments on the Nipissing Forest to provide the Company with the flexibility to plan a realistic harvest and ensure that active harvesters are not penalized. In the 2009 FMP, the Company should plan for a level of harvest that is more realistic than that in the 2004 plan, while still providing adequate flexibility to respond to markets and actual stand conditions.
10. Corporate MNR should develop a policy to limit the proportion of any harvest component that can be committed.
11. Corporate MNR should develop a mechanism to reduce or eliminate wood supply commitments when the actual volume of timber supplied to a mill is habitually well below the commitment level.
12. MNR and the Company should consider managing cedar, larch and hemlock primarily for non-timber values, and refrain from taking measures to try to create a demand for these species.

13. Corporate MNR should provide quantitative direction regarding the role that parks and protected areas can play in meeting old growth objectives for SFL areas.

14. The planning team for the 2009 FMP should include an individual with expertise in park management.

15. Corporate MNR, in collaboration with North Bay MNR and the Company should investigate the degree to which shelterwood managed pine stands function as old growth, and if necessary provide direction on modifying the management of these stands and/or the old growth targets for white pine.

16. The MNR, in consultation with relevant stakeholders, should review and update the land use direction (as specified in Table FMP-7 of the 2004 FMP) for the four EMAs in the McConnell Lakes Area - e122r, e133n, e135n and e132a – to consider more contemporary management goals and values.

17. Corporate MNR should revise the direction provided to planning teams which permits broad and extensive declines in wildlife habitat and habitat levels to fall below those predicted to occur in the SFMM benchmark runs.

18. Corporate MNR should allocate sufficient resources to the task of completing waterbody classification for the Nipissing Forest can be completed by the time of the next Independent Forest Audit.

19. The MNR and Company should adapt their application of the residual timber requirements of NDPEG so that they are more consistent with restoration efforts.

20. Corporate MNR should make strong efforts to ensure that the forest management direction incorporated into the Landscape Guide is compatible with conditions in the Great Lakes – St. Lawrence forest.

21. Corporate MNR should continue its efforts to eliminate errors in the Crown and Patent Land Ownership layers and ensure that development of the 2009 FMP is not affected. In addition, Corporate MNR should clarify, who is responsible for the maintenance and accuracy of the land ownership information, and should develop an updating procedure that allows for the timely updates to the ownership information.

22. NFRM should reduce the size of future AWS harvest allocations in comparison to the average annual rate of depletion forecast in the FMP. This should be done in consultation with District and Regional MNR to determine acceptable ranges.

Principle: Plan Implementation

Suggestion:
None

Recommendations:

23. Within one year, NFRM should develop means to better identify those forest units and site conditions where mechanical or chemical site preparation would enhance regeneration effectiveness, and direct the appropriate treatments to these sites.

24. Within one year, NFRM should assess the need for follow-up treatments on plantations that were established within the audit period. Sites identified as requiring cleaning should be prioritized, and scheduled for treatment as soon as practicable.

25. Corporate MNR should identify a level of funding consistent with the MNR's likely responsibilities regarding road and watercrossing maintenance on the Forest.

Principle: Systems Support

No Recommendations or Suggestions:

Principle: Monitoring

Suggestions:

7. District MNR should document the reasons for late compliance reporting. Corporate MNR should assess whether the schedule for submitting compliance reports is realistic based on information provided by the District MNR.

Recommendations:

26. Corporate MNR should increase the District's compliance budget to permit staff to undertake a level of compliance monitoring and follow-up consistent with the MNR's role in stewardship of the Forest.

27. MNR should formally respond to NFRM regarding the status of the exceptions monitoring program related to Full Tree Harvesting in Shelterwood Regeneration Cuts on the Nipissing Forest.

28. MNR should complete its review of the 2003-04 Annual Reports, and the company should address any required alterations.

Principle: Achievement of Management Objectives and Forest Sustainability

Suggestions:
None.

Recommendations:
None

Principle: Licence Obligations

Suggestions:
None

Recommendations:

29. The 2009 Planning Team should model wood supply based on wood supply commitments that have been finalized or are in advanced stages of completion.

30. Corporate /Regional MNR should clarify the intended wood exchange terms of the wood supply commitment made to St. Marys Paper in a letter to Mr. Ronald Stern, CEO Belgravia Investments Ltd., dated Dec. 15, 1998.

31. The Company and MNR should ensure that the action plan developed to address this audit's findings is produced according to the schedule identified in the 2005 IFAPP.

32. The Minster of Natural Resources should extend the Sustainable Forest Licence held by Nipissing Forest Resource Management Inc. for the Nipissing Forest (Licence No. 542053) for

a further five year period.

Conclusion

The Audit Team believes that management of the Nipissing Forest was in substantial compliance with the laws, licences and Forest Management Plans in effect during the audit period. The Nipissing Forest is being managed within the bounds of sustainability as defined and directed by the Ministry of Natural Resources. The Minster of Natural Resources should extend the Sustainable Forest Licence held by Nipissing Forest Resource Management Inc. for the Nipissing Forest for a further five-year period.

Appendix A: Trend Analysis

This appendix was been prepared by NFRM Inc.

COMPARISON AND TREND ANALYSIS OF PLANNED VERSUS ACTUAL FOREST OPERATIONS REPORT

NIPISSING FOREST

April 24, 2006

REGISTERED PROFESSIONAL FORESTER
2103
MARK LOCKHART
ONTARIO

Prepared By:
Mark Lockhart, RPF
Planning Forester, NFRM Inc

1.0 Introduction

1.1 Scope and Contents of the 2006 Trend Analysis

The tabular data as well as relevant discussion surrounding trends and comparisons in this report have been prepared by a Registered Professional Forester, in accordance with the requirement in Appendix C to the 2006 Independent Forest Audit Process and Protocol (IFAPP). The purpose of this report is to provide an interpretation of the current state of the forest relative to its past state and expected future condition.

The Comparison and Trend Analysis Report can be broken into seven focuses listed as follows:

- *What is the extent of the past, present and current area under management (Table 1);*
- *What are the past and present forest units used to describe the Nipissing Forest (Table 2);*
- *What are the past and present harvest volumes, both planned and actual (Table 3);*
- *What is the past and present harvest area, both planned and actual (Table 4);*
- *What is the forest unit area in the managed productive forest (Tables 5);*
- *What are the levels of past and present renewal and maintenance, both planned and actual (Table 6); and*
- *What percentage of the previously harvested area has been successfully regenerated (Table 7)?*

The current and past Forest Management Plans, the Forest Resource Inventory, the Report of Past Forest Operations and the forest management planning system are used to compare the past, present and future conditions. Data and report availability for these are described for the Nipissing Forest in this report.

The 1990 to 1995 Timber Management Plans: These plans were written for the Nipissing, Ottawa River and Sturgeon River Crown Management Units. The plans were prepared by MNR North Bay District staff, using 1977 aerial photography and 1980 Forest Resource Inventory (FRI). The forest was aged to 1990 to prepare the plans. Wood supply calculations were made using the MADCALC model (version 3.0.0). While each Timber Management Plan (TMP) had its own Forest Units (FU), efforts have been made to group the units to allow for a reasonable summary of the planned and actual activities.

The MNR was responsible for planning and management of all operations for the 1990-1995 term. While provision of data for this term is not required as per the Independent Forest Audit Protocol Appendix C – data that was readily available in preparation of this report is included for trend analysis purposes.

The 1994 to 1999 Timber Management Plan: The three management units in the North Bay District (i.e. Nipissing, Sturgeon River and Ottawa River) were amalgamated to form the North Bay Crown Management Unit. The 1994 plan for the North Bay Crown

Management Unit (CMU) was written one year ahead of schedule to help distribute more evenly the regional planning workload. Similar to the 1990 TMP, the 1994 plan was also prepared by the MNR North Bay District staff. Aerial photography from 1977 and Forest Resource Inventory from 1980 was used as a base for planning. The forest was aged to 1994 and wood supply calculations were undertaken using the MADCALC model (version 3.0.3).

In July 1996, the Minister of Natural Resources issued a Sustainable Forest Licence (SFL) to Nipissing Forest Resource Management Inc. Under a Sustainable Forest Licence, Nipissing Forest Resource Management Inc. (NFRM) became responsible for planning, monitoring and reporting on forest management activities. NFRM also inherited responsibility for all renewal activities such as site-preparation and tree planting. Concurrent with the issuing of the SFL, the Minister of Natural Resources changed the name of the forest from the North Bay Crown Management Unit to the Nipissing Forest.

With the assistance of the North Bay District MNR, NFRM transcribed the 1994 FMP allocations on to the recently delivered 1989 forest resource inventory (FRI) and the information was entered into NFRM's geographic information system. In addition to the FMP, NFRM also updated roads constructed, natural depletions and harvest depletions that occurred on the forest since the 1989 imagery was photographed. While the forest units and area did not match from the old inventory to the new inventory, efforts were made to ensure that the intent of the original 1994 FMP was kept intact. The depletion information and subsequent reporting numbers for both the 1990 FMP and 2004 FMP are based upon the new 1998 FRI using GIS technology.

The 1999 to 2004 Forest Management Plan (FMP): The 1999 Nipissing Forest Management plan was prepared by NFRM using the *Forest Management Planning Manual (FMPM) for Ontario's Crown Forests* (OMNR 1996). A new digital forest inventory based on 1989 aerial photography was used to produce the FMP. The forest was aged to 1999 and the wood supply calculations were determined using the Strategic Forest Management Model (SFMM).

The 2004 to 2009 Forest Management Plan (FMP): The 2004 Nipissing Forest Management plan was prepared by NFRM using the 1996 FMPM. This plan used the same digital forest inventory as its predecessor to produce the FMP, based on 1989 aerial photography. The forest was aged to 2004 and the wood supply calculations were determined using the Strategic Forest Management Model (SFMM). This was the last plan completed as per the requirements of the 1996 FMPM – subsequent Forest Management will be executed in accordance with the 2004 FMPM. Phase-in provisions were made for plans completed under the 1996 FMPM, mainly pertaining to the reporting structure.

This report was completed during the 2004-2009 Forest Management Planning term, and therefore actual figures for this term are limited to data reported in the 2004-2005 annual report. For the previous term, 1999-2004, the trend data relies on the 2003-2004 ten-year annual report, which has been completed for the term in accordance with the phase-in requirements of the 2004 FMPM.

Other relevant reports supporting the creation of this trend analysis are the 1990-1996 Report of Past Forest Operations (RPFO), assembled by the North Bay District MNR, as well as the 1994-1999 RPFO put together by the Planning Forester authoring the 2004 FMP.

1.2 Past Independent Forest Audits

Nipissing Forest Resource Management Inc. has been a part of one previous Independent Forest Audit in 2001, just after completion of its initial Forest Management Plan for the Nipissing Forest. The Audit Team was to determine whether the management of the Nipissing Forest was consistent with the general principles of sustainable forest management during the review period 1996-2001. As a result, NFRM's sustainable forest licence was extended for 5 years.

The Audit Team made eighteen recommendations and six suggestions to address shortcomings and areas of improvement that they considered to be significant. The company/MNR developed an action plan to address these shortcomings as well as a status report to update. The final audit report, action plan and status reports as a result of the 2001 audit have been provided to the 2006 audit team.

1.3 Amendments

There were a total of 93 amendments on the Nipissing Forest over the 2001-2006 period. The total amendments included no major, 4 minor and 89 administrative.

2.0 Trend Analysis Text and Tables

2.1 Summary of Total Area under Management

The data for Table 1 was obtained from Table 4.8.2 for the 1994-1999 term and from Tables FMP-1 and FMP-2 for the 1999-2004 and current (2004-2009) term. As mentioned previously, the 1994 Timber Management Plan was based on 1980 FRI which was then updated to the 1989 inventory. Figures 1-3 summarize Production Forest, Crown Managed Land, and Non-Productive/Protection Forest data respectively presented in Table 1.

The new inventory for the 1999 FMP resulted in a reduction in the amount of area in barren and scattered from approximately 60,000 hectares to about 21,000 hectares. The amount of protection forest was also reduced significantly with the delineation of rocky areas which were consequently transferred from protection forest into non-forested area. The new inventory has also resulted in improved classification of other hardwoods and other conifers into their appropriate working groups.

Between the 1994 and 1999 plans, a reduction of barren and scattered area of 39,000 ha resulted in a coinciding increase in all working group clusters in Table 1. The greatest increase is in the white pine and red pine working groups. The increase in these working groups is predominantly the result of increased efforts to plant more white pine and red pine on sites where the species occurred prior to European settlement. Past harvesting and silvicultural practices resulted in many white pine and red pine stands being left untreated and many of these sites regenerated to poplar and birch. In spite of substantial increases in white pine and red pine area (18,655 ha), there was also a significant increase in the intolerant hardwoods (10,623 ha). Strategies were included in the 1999 FMP to continue converting off-site poplar and white birch stands to white pine and red pine.

The total area of managed land decreased from the 1994 term to the 1999 term due to Land for Life initiatives on the SFL. Remaining unregulated area was eventually shifted into conservation reserve for the 2004 FMP, resulting in yet another overall drop in managed land. In 2004, increases of 4% and 17% in white and red pine working groups are a direct result of FMP objectives in the 1999 and 2004 FMP to rehabilitate Po, Bw, and Mw dominated areas back to original PW and PR forest units. Approximately 2500 ha of artificial regeneration was planted with Red and White Pine species in the 1999-2004 term. Overall decreases in working groups can be attributed to the deferral of managed landbase to Ontario Lands for Life/Ontario Living Legacy Parks and Protected areas.

The forest available for timber production has decreased in the five years since the last plan was written. Decreases in the managed forest together with areas that had been deferred from harvest in the last plan have resulted in 33,200 ha going from the managed landbase into parks and other protected areas, with the exception of approximately 900 ha which went to roads and landings. Other land ownership changes have also affected this overall balance of Crown Managed lands on the Nipissing Forest.

In summary, the inventory completed for the 2004 FMP confirmed that the total amount of production forest has remained stable in the Nipissing Forest. Barren and scattered area that became free to grow in 1999 resulted in increased area in all working group clusters, and remained relatively consistent in 2004, in spite of a large portion of land removed and placed in Ontario Living Legacy Parks and protected area.

2006 Independent Forest Audit - Nipissing Forest

Table 1 - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

		Area in hectares			
		Past Plans			Current
Land Type	Plan Term	1990-1995[1]	1994-1999[2]	1999-2004[3]	2004-2009[4]
Non-Forested					
Other Land		5,577	5,612	19,259	7,635
Forested					
Non-productive		76,612	77,508	73,747	71,615
Productive					
Protection		37,252	37,585	4,538	4,110
Production Forest					
B&S / NSR		59,578	59,976	21,280	19,056
Depleted		-		-	
Forest Stands by Working Group					
Pw		42,234	44,419	59,251	61,832
Pr		9,483	9,560	13,383	15,779
Pj		15,622	15,325	19,909	20,522
S		65,068	62,938	58,744	61,829
B		34,420	32,253	20,922	20,942
By		15,961	16,875	21,302	20,283
C		16,390	18,753	28,474	27,243
He		6,900	9,335	12,036	11,012
Po		79,864	82,947	100,189	98,218
Bw		93,809	88,871	82,251	75,426
Mh		114,807	113,061	108,437	103,856
H		11,912	19,929	32,144	32,377
Total Production Forest		566,048	574,242	578,323	568,375
Total Forested Land		679,912	689,335	656,607	644,100

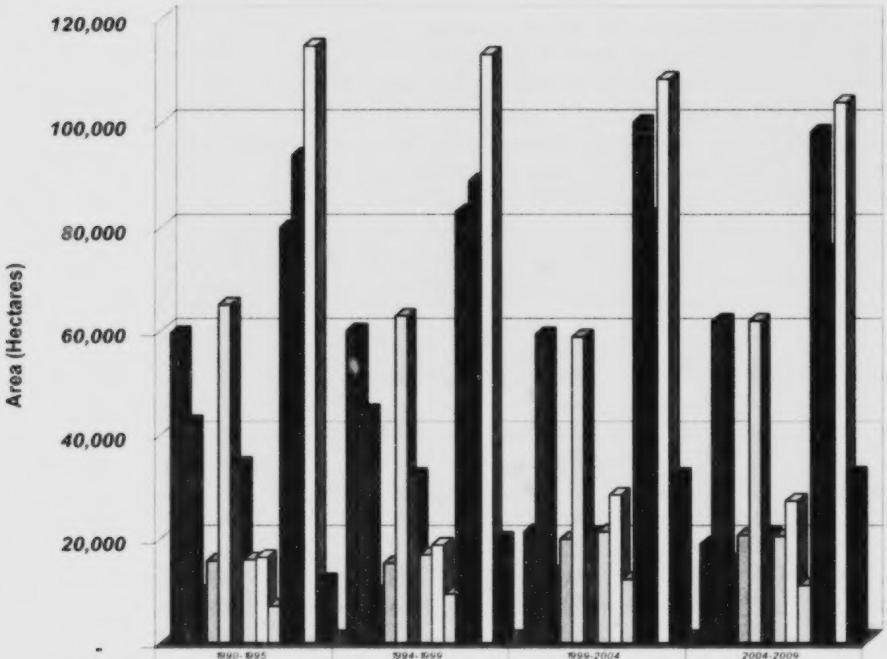
[1] Source: Table 4.8.2 1990-1995 Nipissing, Ottawa River and Sturgeon River TMP's.

[2] Source: Table 4.8.2 1994-1999 TMP.

[3] Source: Tables FMP-1 and FMP-2 1999-2004 FMP.

[4] Source: Tables FMP-1 and FMP-2 2004-2009 FMP.

Production Forest (Nipissing Forest)



	1990-1995	1994-1999	1999-2004	2004-2009
● B&S / NSR	59,578	59,976	21,280	19,056
● Pw	42,234	44,419	59,251	61,832
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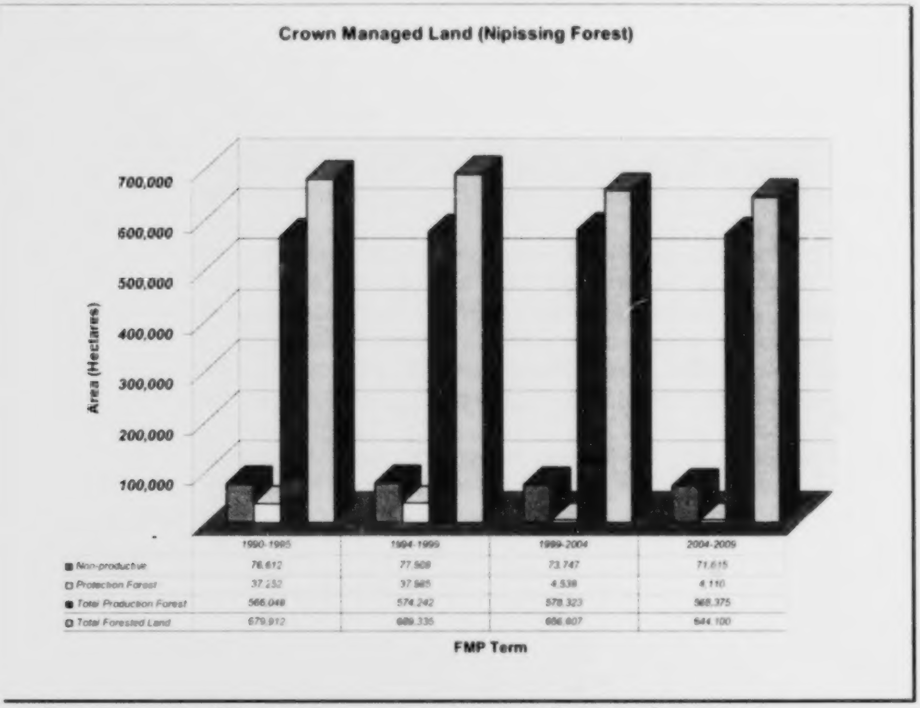
○ Mh	114,807	113,061	108,437	103,856
● H	11,912	19,929	32,144	32,377

FMP Term

Figure 1. Summary of Production Forest on the Nipissing Sustainable Forest Licence.



	1990-1995	1994-1999	1999-2004	2004-2009
▨ Non-productive	76,612	77,508	73,747	71,615
☐ Protection Forest	37,252	37,585	4,538	4,110
■ Total Production Forest	566,048	574,242	578,323	568,375
☐ Total Forested Land	679,912	689,335	656,607	644,100

Figure 2. Summary of Managed Crown Land on the Nipissing Sustainable Forest Licence.

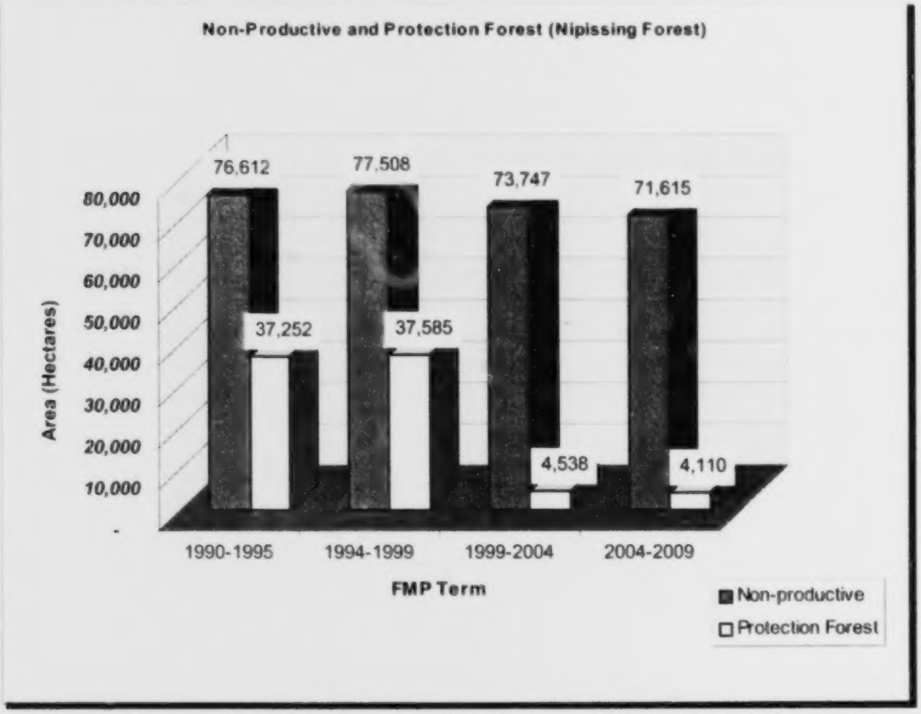


Figure 3. Summary of Non-Productive and Protection Forest on the Nipissing Sustainable Forest Licence.

2.2 Summary of Forest Units

Tables 2a, 2b and 2c describe the forest units that were used in the 2004 FMP, the 1999 FMP and the 1994 TMP respectively. The forest units used for the 1994 TMP were based primarily on working group, while those for the 1999 FMP are based primarily on forest ecosystem classification (FEC) types. Forest units for the 2004 FMP are based on the MNR template for Standard Forest Units (SFU) in the Northeast Region of Ontario.

Forest units for the 1999 FMP were developed with the assistance of MNR's South Central Science & Technology Unit and are based on the Field Guide to Forest Ecosystems of Central Ontario (1997). These forest units are based largely on vegetative forest cover communities. These forest units provided more accurate representation of the mixed forest conditions found on this unit and were a better reflection of wildlife habitat units thus improving modeling for wildlife habitat.

The methodology for developing forest units has changed since the 1999 FMP was written. In the past, each FMP team in the province developed their own forest units for each FMP. Forest units sometimes changed from one FMP to another within the same management unit. In addition, forest units were usually different from one management unit to another. The inconsistency between and within management units made it difficult to compare forest cover types between multiple management units as well as from one FMP to another within the same management unit. For this reason, MNR introduced standardized forest units (SFUs) in the last five-year term. Figure 4.1 in the 2004 FMP shows the relationship between forest units in the 1999 FMP and 2004 FMP.

The Planning Team for the 2004 Nipissing Forest Management Plan grouped the MNR's template 31 habitat units into broader categories, with the intention of creating sensible forest units. The goal of the exercise was to strike a balance between limiting the number of forest units for practical purposes (e.g. calculating targets and implementing FMP strategies) and considering significant ecological, functional and developmental differences in forest types. The goal of balance was achieved after detailed analysis of the planning inventory combined with consultation with the planning team, the MNR District, Region as well as Southern Science and Information FMP advisors.

There are 15 forest units on the Nipissing Forest. Table 2a provides a description of each, including the relationship between forest units and the forest ecosystems of Central Ontario (FEC), most commonly referred to as ecosite. A description of the silviculture system that will be implemented on each forest unit, forest type and dominant working group is also shown in Table 2a.

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Table 2a - DESCRIPTION OF FOREST UNITS (FMP-8) 2004-2009 FMP

Forest Unit		Forest Type	Main WG	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
BW	White Birch, Poplar Mix	Intolerant Hardwood	BW/PO	17, 18, 27, 21	Clearcut	Refer to Figures 4.3 and 4.4 in the 2004-2009 FMP	Refer to Figure 4.5 in the 2004-2009 FMP
BY	Yellow Birch	Tolerant Hardwood	UH	29, 28, 30	Uniform Shelterwood 2C		
HDSEL	Tolerant Hardwood Selection	Tolerant Hardwood	MH	29, 28	Selection		
HDUS	Tolerant Hardwood Uniform Shltwd	Tolerant Hardwood	MH	27, 28, 29	Uniform Shelterwood 2C		
HE	Hemlock	Conifer	HE	30, 28	Uniform Shelterwood 3C		
LWMX	Lowland Mixedwood	Tolerant Hwd/Con	LH	17, 35, 33, 34	Uniform Shelterwood 2C		
MCL	Mixed Conifer Lowland	Conifer	SB	33, 16, 31, 32	Clearcut		
MW	Mixedwood	Mixedwood	PO/BF	18, 21, 22	Clearcut		
PJ	Jack Pine	Conifer	PJ	15	Clearcut		
PJSB	Jack Pine Upland Black Spruce Mix	Conifer	SB	16, 15, 13	Clearcut		
PO	Poplar	Intolerant Hardwood	PO	18, 17	Clearcut		
PR	Red Pine	Conifer	PR	12	Clearcut		
PWST	White Pine Seed Tree	Mixedwood	PW/PO	11, 20, 18, 21	Clearcut (Seed Tree)		
PWUS	White Pine Uniform Shelterwood	Conifer	PW	11, 20, 21	Uniform Shelterwood 3C		
SF	Spruce / Fir	Conifer	BF/SB/SW	16, 22, 18	Clearcut		

Source: FMP-8 2004-2009 FMP

2006 Independent Forest Audit - Nipissing Forest
Table 2b - DESCRIPTION OF FOREST UNITS (FMP-8) 1999-2004 FMP

Forest Unit		Forest Type	Main WG	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
Pw-US	White Pine Uniform Shelterwood	Conifer	Pw	11	Uniform shelterwood - 4 cut	es11 - Pw/Pr high stocking	Pw56Pr13Po12Lh4Bf4Bw5Pj3Sw2Sb1Uh1 Avg. Stocking: 58%; Avg. Site Class: 2
MxPwPr-ST	Mixedwood with White Pine/Red Pine Seed Tree	Conifer hardwood mix	Po	11	Clearcut/seed tree/standards	es11 - Pw/Pr low stocking	Po34Pj20Bw10Pw9Sw8Pr8Bf7Sb1Lh3 Avg. Stocking: 73%; Avg. Site Class: 2
MixCon-US	Mix Conifer Uniform Shelterwood	Mixed Conifer	Mixed conifers (Pw,Pr,Sw)	12,13,20,21,22	Uniform shelterwood - 4 cut	Mixed conifers high stocking	Pw27Bw15Sw15Pr10Po8Bf8Lh5Sb4Ce4Uh2Pj1Mh1 Avg. Stocking: 72%; Avg. Site Class: 2
MixCon-CC	Mix Conifer Clearcut	Mixed Conifer	Mixed conifers (Pw,Pr,Sw)	12,13,20,21,22	Clearcut	Mixed conifers low stocking	Bw19Po18Bf14Pw10Pr8Sw7Lh7Sb5Ce5Pj3Uh3Mh1 Avg. Stocking: 73%; Avg. Site Class: 2
PineOak-US	Pine Oak Uniform Shelterwood	Conifer hardwood mix	Pw,Or,Po	14,23,24,25,26	Uniform shelterwood - 4 cut	Pw/Or mix	Uh25Pw18Po19Mh8Lh10Bw8He2Bf3Pr3Sw3Sb1 Avg. Stocking: 73%; Avg. Site Class: 2
BoC-CC	Boreal Conifer Clearcut	Conifer	Sp,Pj	15,16	Clearcut	Pj/Sb/Sw	Sb50Pj18Po6Bw6Bf7Sw5Pw3Pr1Ce2Uh1Lh1 Avg. Stocking: 65%; Avg. Site Class: 2
PoMix-CC	Poplar Mix Clearcut	Mixedwood	Po mixedwoods (intolerants)	17,18,19	Clearcut	Po dominated mixedwoods	Po39Bw23Bf11Lh9Sw9Sb2Pj2Mh2Uh2Ce1 Avg. Stocking: 70%; Avg. Site Class: 2
Hwd-SEL	Hardwood Selection	Tolerant hardwood	Mh,Be,By	24,25,26,27,28,29	Selection	Higher quality tolerant hwds	Mh45Uh19Lh9He7Bw5Bf4Sw3Pw3Po2Sb1Ce1 Avg. Stocking: 87%; Avg. Site Class: 2
Hwd-US	Hardwood Uniform Shelterwood	Tolerant hardwood	Mh,Be,By	24,25,26,27,28,29	Uniform shelterwood - 2 cut	Lower quality tolerant hwds	Mh34Bw16Uh14Po9Lh6Bf4Sw5Pw3He6Ce2 Avg. Stocking: 67%; Avg. Site Class: 2
HwdHe-US	Hardwood/Hemlock Uniform Shelterwood	Tolerant hardwood	By,He	27,28,29,30	Uniform shelterwood - 2 cut	Tolerant hwd (high By), He	Uh31He21Mh10Lh11Bf10Sw6Ce4Pw3Bw2Sb1Po1 Avg. Stocking: 82%; Avg. Site Class: 2
Low-SEL	Lowland Selection	Conifer mixedwood	Ce, Sb, lowland tolerant hwds	33,34,35	Selection	Lowland mix (Po,Ms,Ab,Mh)	Lh40Mh17Uh11Bw4Bf7Po8Sw4He4Pw2Ce1Sb1 Avg. Stocking: 78%; Avg. Site Class: 2
Low-CC	Lowland Clearcut	Conifer mixedwood	Sb, La	31,32,33,3	Clearcut	Lowland Sb,La mixedwoods	Sb24Ce22Bf11Lh8Uh6Sw7La9Po6Bw4Pw1 Avg. Stocking: 67%; Avg. Site Class: 2

Source: FMP-8 1999-2004 FMP.

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Table 2c - DESCRIPTION OF FOREST UNITS 1994-1999 TMP

Forest Unit		Forest	Main	Silvicultural	FRI Parameters	Additional
Code	Name	Type	WG	System	& Criteria	Information
BF1	Balsam Fir	Conifer	Bf	Clear Cut	Bf working group, all site classes	Refer to 4.10.3 Forest Units in 1994-1999 TMP for a detailed description of all Forest Units.
BW1	White Birch Site Classes X, 1, 2	Intolerant Hardwood	Bw	Clear Cut	Bw working group, site classes X, 1, 2	
BW3	White Birch Site Class 3	Intolerant Hardwood	Bw	Clear Cut	Bw working group, site class 3	
OC1	Other Conifer	Conifer	Ce, He, La	Clear Cut, Uniform Shelterwood Group Shelterwood, Selection	Ce, La working group, all site classes	
PJ1	Jack Pine	Conifer	Pj	Clear Cut	Pj working group, all site classes	
PO1	Poplar Site Classes X, 1, 2	Intolerant Hardwood	Po	Clear Cut	Po working group, site classes X, 1, 2	
PO3	Poplar Site Class 3	Intolerant Hardwood	Po	Clear Cut	Po working group, site classes 3	
PR1	Red Pine	Conifer	Pr	Clear Cut (Seed Tree), Shelterwood	Pr working group, all site classes	
PW1	White Pine	Conifer	Pw	Clear Cut (Seed Tree), Shelterwood	Pw working group, all site classes, stocking < 0.3	
PWU	White Pine Uniform Shelterwood	Conifer	Pw	Shelterwood, Clear Cut (Seed Tree)	Pw working group, all site classes, stocking > 0.3	
SC4	Site Class 4	Conifer / Hardwood	All working groups	Clear Cut, Shelterwood, Selection	All working groups, site class 4	
SP1	Spruce	Conifer	Sb, Sw	Clear Cut	Sb & Sw working groups, all site classes	
TH1	Tolerant Hardwood	Tolerant Hardwood	Mh, Ms, A, By, H, Oh, He	2-Cut Shelterwood, Selection	Mh, Ms, A, By, H, Oh, He working groups, site class 3. All tolerant hardwoods not meeting criteria for SEL forest unit.	
SEL	Selection	Hardwood	Mh, Ms, A, By, H, Oh, He	Selection, Shelterwood	Mh, Ms, A, By, H, Oh, He working groups, site class X, > 60 years & stocking >0.4 site class 1, > 61-100 years & stocking >0.5 site class 1, >100 years & stocking >0.4 site class 2, 61-100 years & stocking >0.6 site class 2, >100 years & stocking >0.5	

Source: FU description pp. 681-687 in 1994-1999 TMP

2.3 Summary of Planned vs Actual Harvest Volumes

Table 3 shows planned and actual harvest volume by species on an annual basis. Information for planned volumes were obtained from the 1994 FMP (Table 4.17); from the 1999 FMP (Table FMP-21), and finally from the 2004 FMP (Table FMP-21). Figures for the 1994-95 actual volume were obtained from timber billing and scaling information, and for the1995 to 1999 and from the 1994-1995 annual report (Table 6.3). For the 1999-2004 term the actual data was obtained from the 2003-2004 ten-year report (Table AR-11) at the completion of the planning term. Actual data for the current term (2004-2009) is based on first year of information provided in the 2004-2005 annual report (Table AR-11). Data for each planned and actual term has been annualized to reflect more comparable information between terms. Figures 4-7 summarize volume by species grouping data presented in Table 3.

MNR increased volume estimates for the 1994 TMP, realizing an underestimation from the previous TMP (apparent in Table 3 for 1990-1994 term), but the largest consumer of poplar and white birch pulp, the MacMillan Bloedel mill in Sturgeon Falls, stopped accepting hardwood pulp when it converted to a recycling facility to manufacture corrugated cardboard. Consequently, the higher volume estimates for poplar and white birch for the 1994 term never materialized, and actual yields were lower than planned for the 1994 term. Planned volume for the 1994 term was 658,100 m^3/year, while the actual yield was much lower at 346,900 m^3/year.

NFRM further refined volume estimates for the 1999 FMP based on actual yields from the previous two terms. White pine and red pine yield estimates were increased based on actual yields from the Nipissing Forest. Yields for this term for these two species are higher yet than estimated, indicating more investigation is likely required. Yields for jack pine and spruce combined this term are lower than planned, likely influenced by a shortfall in harvest area. Balsam fir yields to date are much lower than planned because of the spruce budworm infestation that occurred during the previous planning period. Annual poplar and white birch yields remain relatively consistent through each term. Overall planned harvest yields for the 1999-2004 term were 707,300m^3/year, while actual figured totalled only 399,800 m^3/year.

Overall decline in utilization of harvest area (see Table 4 for more details) has contributed to these figures missing targets set forth in the FMP. The softwood lumber dispute with United States continues to result in poor markets for red and white pine forcing Tembec to drop one shift at their mill in Mattawa. Compounding the problem was limited markets for SPF sawlogs (again markets continued to suffer as a result of the softwood lumber dispute), and a large area allocated in the plan with low volume/low quality material. While markets for white birch and dense hardwood pulp continued to increase in strength, the price was too low to support additional volumes being harvested in these areas.

Yields for the 2004 term are available only for one operating year. Trends are difficult to establish for this term as annual figures could be biased to selected species depending on a number of factors in the first year of the plan.

In the preparation of the 2004 FMP, the planning team decided to improve yield information, using locally specialized data for some standard forest. Yield curves in the 2004 FMP originated from two different sources depending on the SFU. Some were based on Plonski Modified pure species curves developed in SFMMTool. For others, yield curves were developed by the Forestry Research Partnership (FRP) Benchmark Yield Curve Project undertaken by Dr. Margaret Penner, private consultant and Murray Woods, OMNR in cooperation with other government and industry staff. Using these locally developed yield curves will hopefully improve yield estimates across the forest.

2006 Independent Forest Audit - Nipissing Forest
Table 3 - Summary of Planned & Actual Harvest Volumes

Average Planned Annual Harvest Volumes

Volumes are Annualized for the indicated 5 year period

	Volume in '000's cubic metres			
	Past Plans			Current
Species	1990[1]	1994[2]	1999[3]	2004[4]
Pw	41	33	57	82.6
Pr	10	9	17	34.6
Pj	11	22	48	54.4
Sp	34	110	74	108.0
He	5	9	17	13.4
Bf	14	69	46	49.8
Oc	15	18	9	6.3
M	52	77	53	65.3
Bw	71	149	152	96.4
Po	53	119	174	179.6
Oh	23	43	60	72.0
Total Planned Volumes	328.7	658.1	707.3	762.4

[1] Source: Table RPFO-4 1990-1994 RPFO.

[2] Source: Table 4.17 1994-1999 TMP

[3] Source: Table FMP-21 1999-2004

[4] Source: Table FMP-21 2004-2009

Actual Harvest Volumes

Volumes are Annualized for the indicated 5 year period

	Volume in '000's cubic metres			
	Past Plans			Current
Species	1990[1]	1994[2]	1999[3]	2004[4]
Pw	38.0	53.2	68.5	111.8
Pr	18.4	23.7	30.4	28.1
Pj	78.4	22.8	32.7	25.7
Sp	32.6	49.0	64.4	64.8
He	0.0	0.6	2.1	1.1
Bf	0.8	6.5	6.8	7.0
Oc	0.4	0.3	0.2	0.9
M	24.2	48.0	53.6	51.5
Bw	239.6	46.2	56.1	47.6
Po	110.2	84.9	74.9	65.2
Oh	11.0	11.6	9.9	20.6
Total Actual Volumes	553.7	346.9	399.8	424.3

[1] Source: Table RPFO-4 1990-1994 RPFO.

[2] Source: TSBS data from 1995-1999 and Table 6.3 from 1994-1995 AR

[3] Source: Table AR-11 2003-2004 AR

[4] Source: Table AR-11 2004-2005 AR

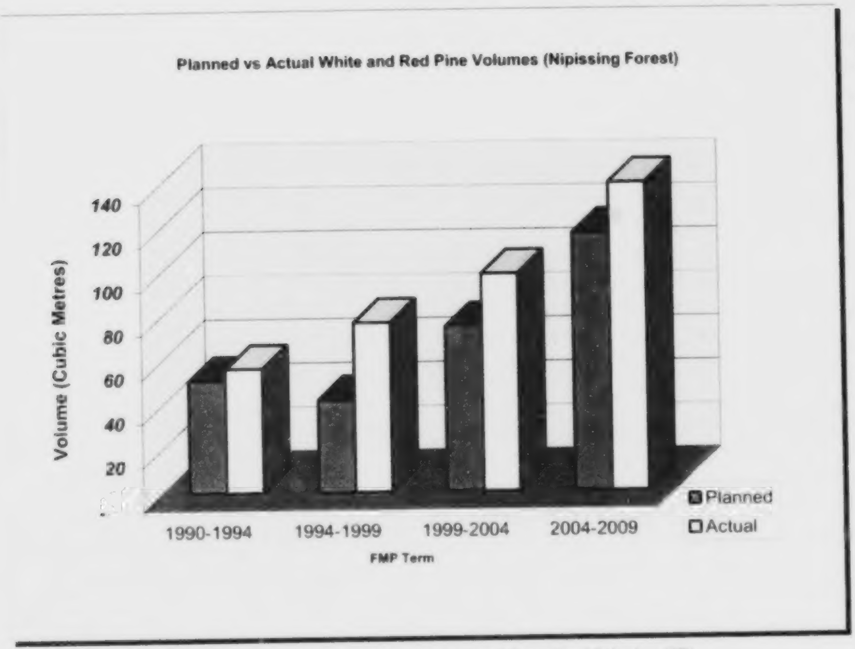


Figure 4. Summary of Red and White Pine Volumes Utilized from the Nipissing SFL.

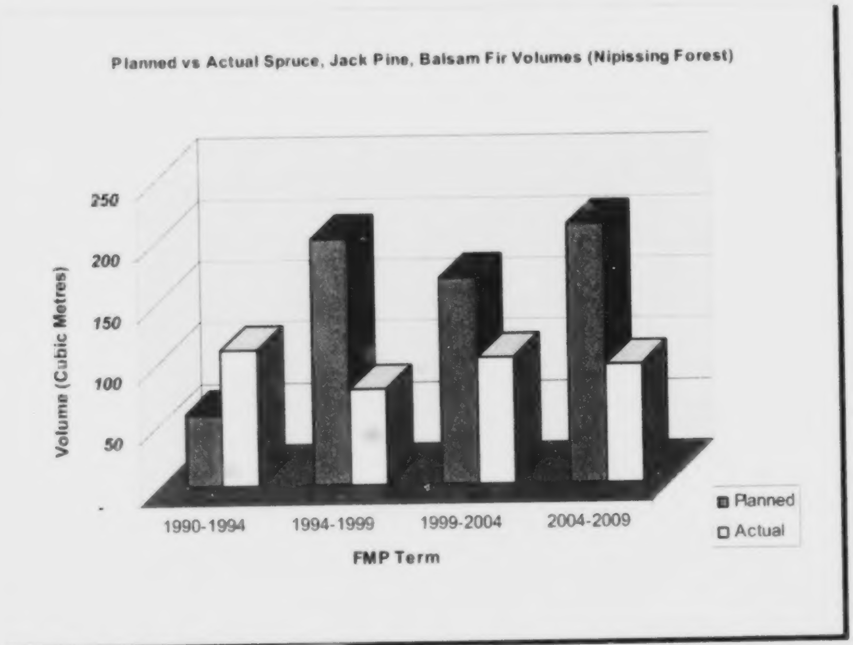


Figure 5. Summary of Spruce, Pine and Fir Volumes Utilized from the Nipissing SFL.

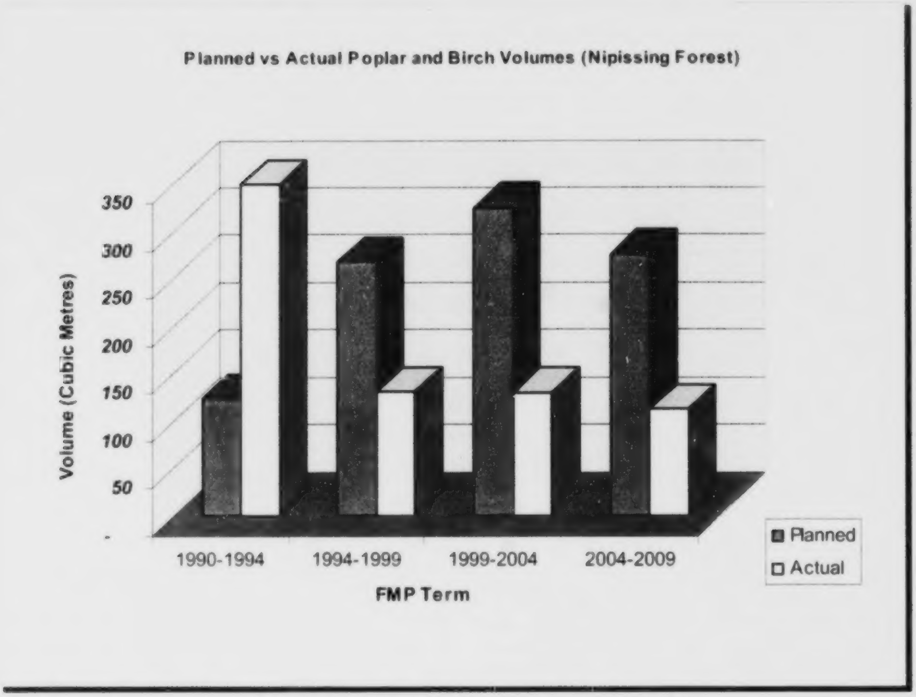


Figure 6. Summary of Poplar and Birch Volumes Utilized from the Nipissing SFL.

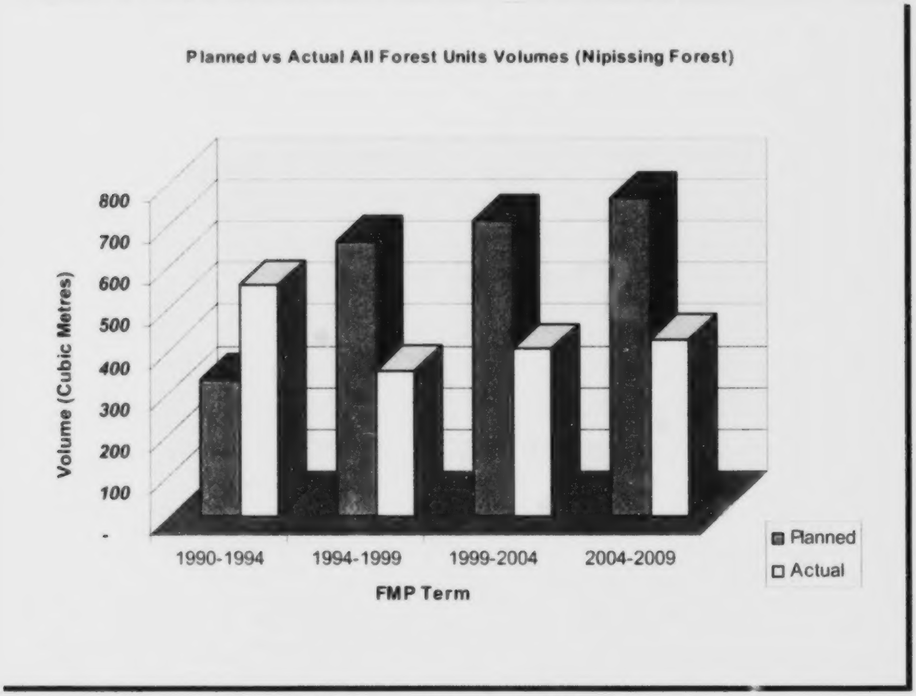


Figure 7. Summary of All Forest Unit Volumes Utilized on the Nipissing SFL.

2.4 Summary of Planned vs Actual Harvest Areas

The actual harvest areas in Table 4 have been annualized for three prior terms, 1990, 1994, and 1999. Planned figures presented from the 1999 term include the adjustments required by Amendment 2000-36. The current term actual figures are based on harvest levels reported in the first annual report of the 2004 FMP. Figures 8-12 summarize area harvested by forest type from data presented in Table 4.

The total planned harvest area over the past three terms has remained steady (11,604 ha/year for the 1990 term; 10,604 ha/year for the 1994 term; and 11,125 ha/year for the 1999 term) according to forecast figures from the TMPs and FMPs. The current term has an annual allowable harvest forecast similar to historic figures at 10,604 ha/year.

Total actual harvest area has fluctuated more significantly with only 42% of the planned area being harvested during the 1990 term, 58% being harvested in the 1994 term and 50.7% of the planned annual area was harvested in the five year breakdown for the 1999 term. The primary reason that actual harvest area is only about half of planned harvest area for all three terms is largely due to a continued absence of consistent markets for hardwood pulp from both tolerant and intolerant hardwood species.

The 2004 actual figure from the first year of harvest of the term is following similar trends to years of the past, in spite of further declining markets.

2006 Independent Forest Audit - Nipissing Forest

Table 4 - SUMMARY OF PLANNED AND ACTUAL HARVEST AREA

Past and Current Plans

Area is Annualized for the indicated period

Forest Unit				Planned Annual Harvest				Actual Harvest Area			
				Area in hectares				*Area in hectares*			
				Past Plans			Current	Past Plans			Current
				1990[1]	1994[2]	1999[3]	2004[4]	1990[5]	1994[6]	1999[7]	2004[8]
2004	1999	1994	1990								
PWUS	Pw -US	PWU	Pw	853	1,114	445	1,777	583	1,078	344	1,509
PWST	MxPw Pr-ST	PW1, PR1	Pr	70	164	40	518	73	182	34	87
HE	MixCon-US					1,008	130			751	-
	PineOak-US					215				95	-
Subtotal Midtolerant Conifer Mgmt:				**923**	**1,278**	**1,709**	**2,425**	**656**	**1,259**	**1,224**	**1,596**
SF	MixCon-CC	BF1	Bf	686	640	1,739	860	311	162	974	178
PJ, PR, PJSB	BoC-CC	SP1, PJ1	Pj, Sp	1,381	1,017	696	722	896	744	419	291
MCL	Low -CC	OC1	Ce, He, Oc	371	301	599	134	65	219	190	20
Subtotal Conifer Management:				**2,437**	**1,958**	**3,034**	**1,716**	**1,273**	**1,125**	**1,583**	**489**
HDSEL	Hwd-SEL	SEL, TH1	Mh, Oh, Th	3,732	4,514	3,378	2,524	924	2,179	1,533	465
LWMX	Low -SEL					22	235			2	14
HDUS	Hwd-US		By, By3	335		884	837	356		298	309
BY	HwdHe-US					603	257			176	28
Subtotal Tolerant Hardwood Management:				**4,067**	**4,514**	**4,888**	**3,853**	**1,279**	**2,179**	**2,009**	**816**
PO,BW, MW	PoMix-CC	PO1, PO3,	Bw , Po, Bw 3	4,083	3,006	1,494	2,610	1,624	1,825	830	1,260
Subtotal Intolerant Hardwood Management:				**4,083**	**3,006**	**1,494**	**2,610**	**1,624**	**1,825**	**830**	**1,260**
		SC4	SC4	95	190				12		
	Total Area:			**11,604**	**10,947**	**11,125**	**10,604**	**4,832**	**6,402**	**5,646**	**4,161**

[1] Source: Table RPFO-1 1990-1994 RPFO.

[2] Source: Table RPFO-4 1994-1999 draft RPFO.

[3] Source: Table FMP-19 (post 2000-36 minor amend) 1999-2004 FMI

[4] Source: Table FMP-19 2004-2009 FMP.

[5] Source: Table RPFO-1 1990-1994 RPFO.

[6] Source: Table RPFO-4 1994-1999 draft RPFO.

[7] Source: Table AR-1 2003-2004 Ten-Year Annual Report.

[8] Source: Table AR-1 2004-2005 Annual Report (For the 1st fiscal yr of the 2004 FM

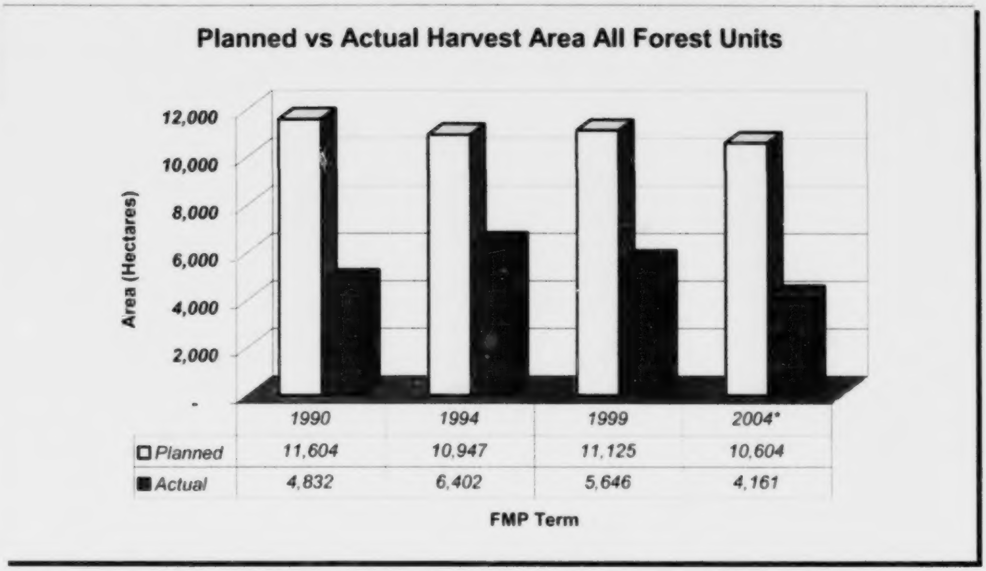


Figure 8. Summary of All Forest Unit Area Harvested on the Nipissing Sustainable Forest Licence.

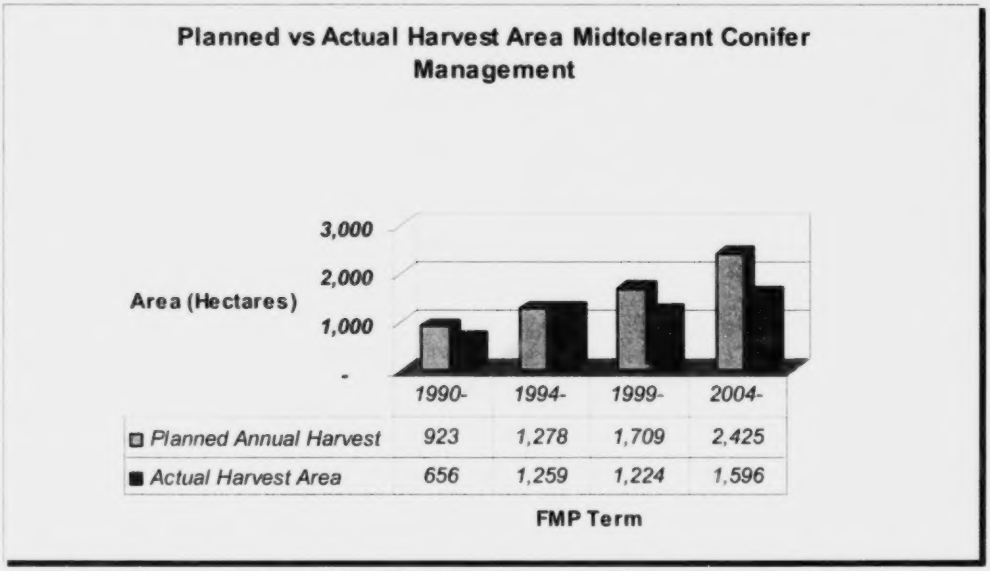
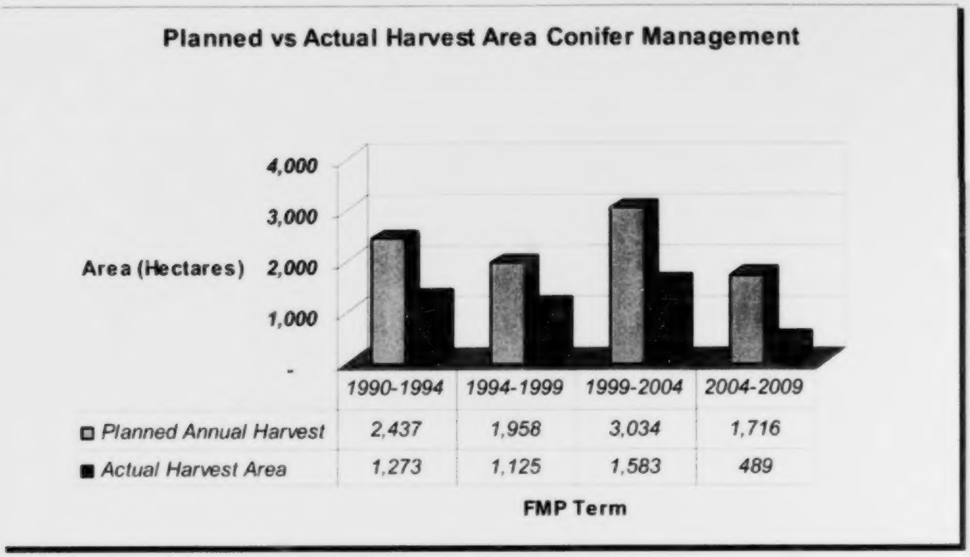
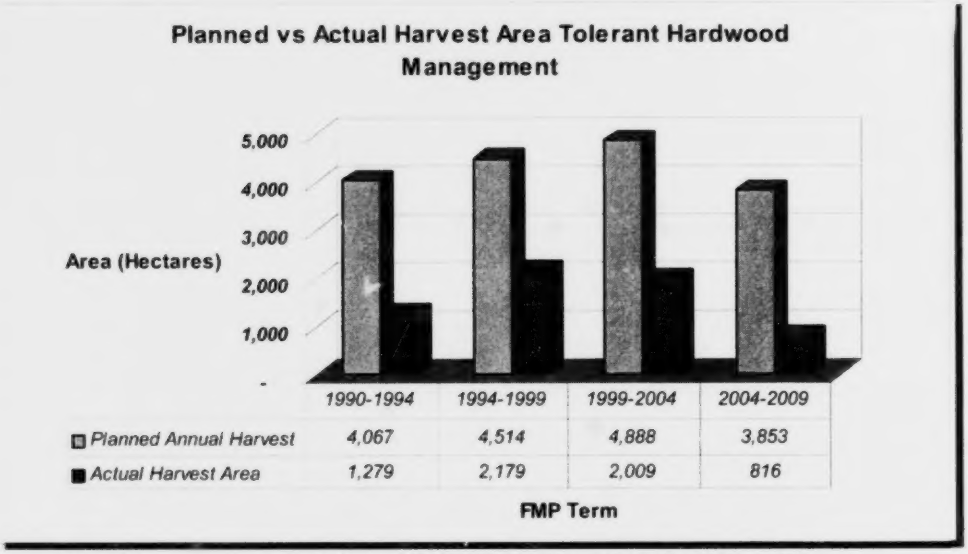


Figure 9. Summary of Mid-tolerant Conifer Managed Area Harvested on the Nipissing SFL.



	1990-1994	1994-1999	1999-2004	2004-2009
▨ *Planned Annual Harvest*	*2,437*	*1,958*	*3,034*	*1,716*
■ *Actual Harvest Area*	*1,273*	*1,125*	*1,583*	*489*

Figure 10. Summary of Conifer Managed Area Harvested on the Nipissing SFL.



	1990-1994	1994-1999	1999-2004	2004-2009
▨ *Planned Annual Harvest*	*4,067*	*4,514*	*4,888*	*3,853*
■ *Actual Harvest Area*	*1,279*	*2,179*	*2,009*	*816*

Figure 11. Summary of Tolerant Hardwood Managed Area Harvested on the Nipissing SFL.

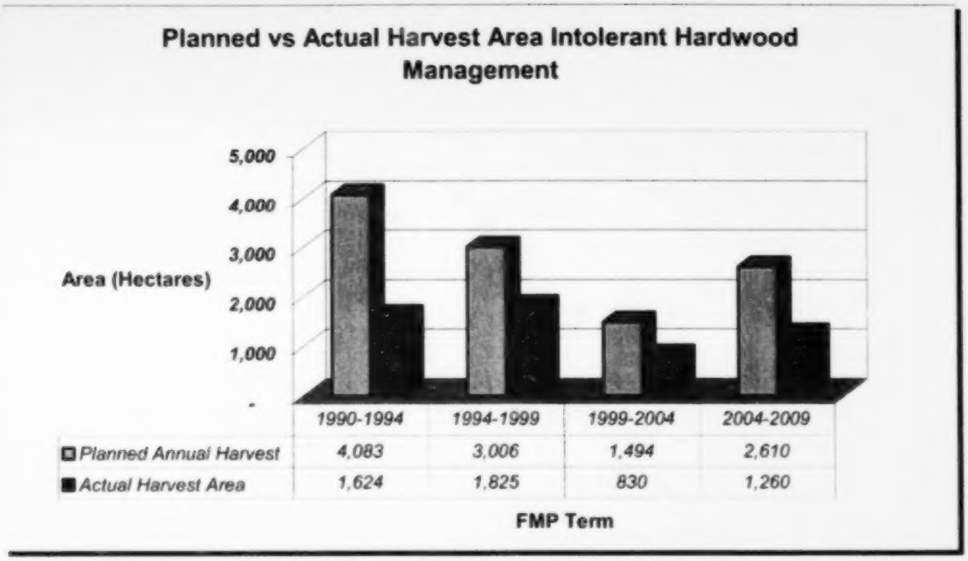


Figure 12. Summary of Intolerant Hardwood Managed Area Harvested on the Nipissing SFL.

2.5 Summary of Managed Productive Forest by Forest Unit

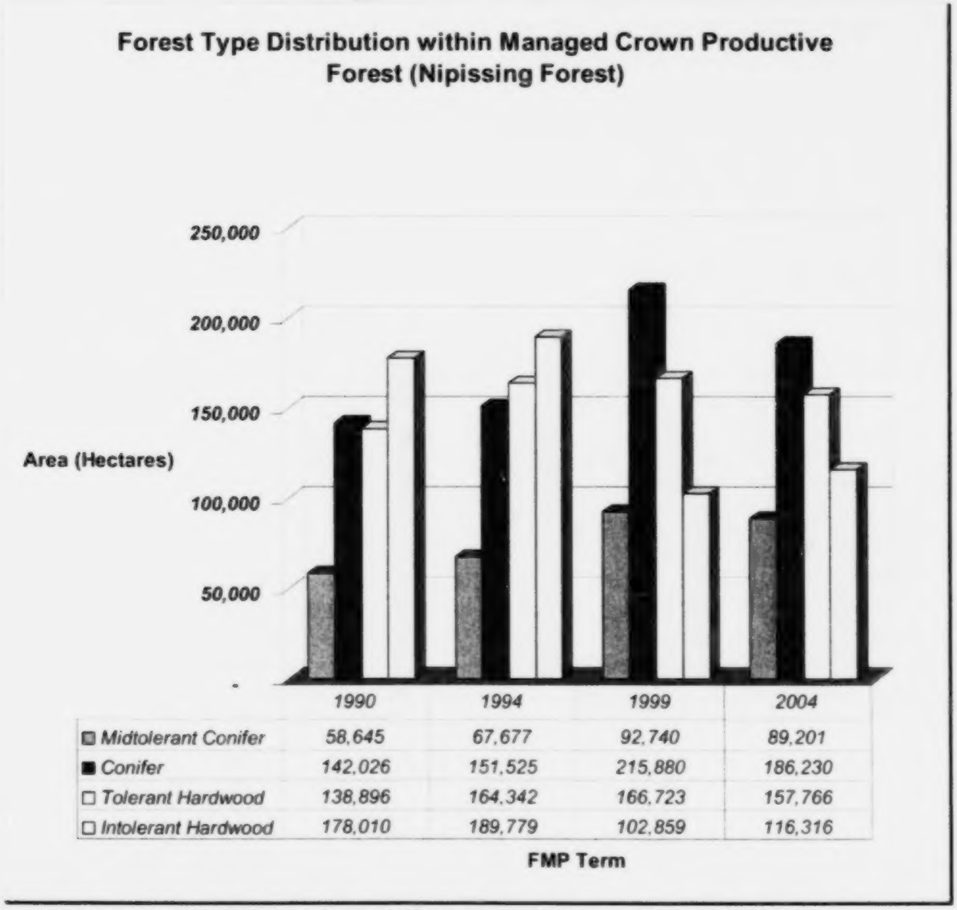
Tables 5a through to 5d can be found in Appendix 1 of this report. Data from these tables has been summarized in Figure 13 by forest type. Comparing landbase trends using forest units has proven to be a challenge throughout this report. Like the harvest area figures, it was decided that forest type was the best category available to group transitioning forest units. Whether or not results are meaningful enough is difficult to determine, however trend identification may be made in a general way.

Table 5a provides a summary of managed productive forest by forest unit and age class for the current term (2004-2009). The data has been extracted from Table FMP-9 contained in the 2004 FMP. Tables 5b and 5c show area by forest unit for the two previous terms. Information for these tables was derived from FMP-9 and TMP Tables 4.9, which is the Summary of Crown Production Forest Area by Working Group and Age Class. Given that a summary of area by forest unit and age class was not present in the 1994 plan, the area within the working groups was slotted into the most appropriate forest unit or group of forest units for the given TMP. For example, the area within Pw working group in the 1994 TMP was tabled under the PW1/PWU "grouped" forest unit. Table 5d is a compilation of Tables 5a, 5b and 5c demonstrating the age class structure for the entire managed productive forest, all forest units combined, for the current term and for the two previous terms.

It is noteworthy that the selection forest units (i.e. Low-SEL and Hwd-SEL) are not tabled by age-class within the source data (i.e. FMP-9) for the current term given that selection forest units are inherently uneven-aged. In order to make a meaningful comparison between past plans (that included selection forest units by age-class) and the current plan the area within the selection forest units was distributed among the age-classes based on a weighted percentile of all of the other forest units. This method, although imperfect in its assumptions, maintains the total managed productive forest area without obscuring trends expressed by the other forest units.

The total amount of managed production forest shown in Table 5d for the 1994 and the 1999 terms varies slightly from the total amount of managed production forest shown in Table 1 (0.03% for 1999 and 0.16% for 1994) – these inconsistencies can be attributed in part to rounding errors. However, there is a significant difference in this information for the 1990 term (566,048 ha of Crown production forest in Table 1 versus 517,577 ha in Table 5d). This may be somewhat explained with the partial additions of McConkey and Wilson Townships into the Nipissing Forest. Other reasons for this area difference are unknown at this time – due to lack of historic records.

Overall differences of close to 30,000 hectares in Productive Landbase from 1999 to 2004 are the direct result of land transfer from Crown Managed to parks and protected areas during the Ontario Land's for Life/Ontario Living Legacy initiatives in the late 1990's and early 2000's. Other less obvious differences between groups are most likely the effect of differences between forest unit querying over planning periods.



Forest Type Distribution within Managed Crown Productive Forest (Nipissing Forest)

	1990	1994	1999	2004
▨ *Midtolerant Conifer*	*58,645*	*67,677*	*92,740*	*89,201*
■ *Conifer*	*142,026*	*151,525*	*215,880*	*186,230*
□ *Tolerant Hardwood*	*138,896*	*164,342*	*166,723*	*157,766*
□ *Intolerant Hardwood*	*178,010*	*189,779*	*102,859*	*116,316*

Figure 13 Forest Type Distribution within Managed Crown Productive Forest

Figure 14 illustrates a more even age class distribution among the first three age classes (B&S, 1-20 and 21-40) in 1999 than there was in any of the previous terms. Figure 14 also shows less area in the 121+ age class in 1999 term than there was in the previous two terms. This is a result of the MNR policy that was in place for many years to harvest the "oldest first". The 1999 FMP contains a strategy to maintain a range of age classes in each forest unit, as well as to approach a more balanced age class distribution in each forest unit which is anticipated to result in more area in the 121+ age class. The charts in Figure 14 are for comparative purposes illustrating the individual age class structure within each planning term.

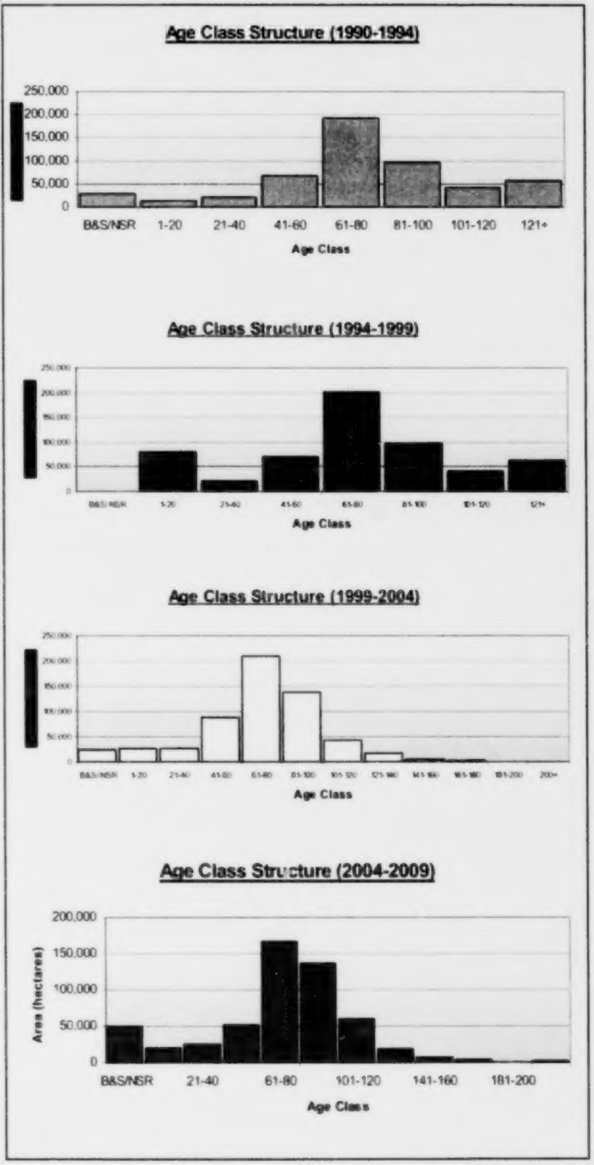


Figure 14 – Ageclass distribution from 1990 to 2004 on the Nipissing Forest

Ageclass distribution on the forest appears to be steadily improving as of the start of the current management plan. Still over half of the forest is now in the 61-90 age class with only 6% in each of the 0-30 and 121+ age classes. A goal to move towards a forest with a more even amount of area in each age class was set in the current plan, with relatively less area in the older age classes. A primary objective in the current FMP is to reduce harvesting in certain age classes to allow more area to enter into the older age classes. SFMM was used to constrain harvest levels and calculate acceptable levels to achieve this objective.

In response to government initiatives, and problems created by over harvest of older age classes on the Nipissing Forest in the past, the planning team and the old growth task team developed an old growth strategy for the Nipissing Forest. This strategy provides a definition for old growth, describes old growth on the Nipissing Forest, and provides both landscape and stand level objectives and strategies. The strategy will be implemented via the current and subsequent forest management plans and will be evaluated via the report of past forest operations. See Appendix VIII of the 2004 FMP for the complete strategy.

Development of this strategy has been guided by MNR's old growth policy (2003), the *Old Growth Definitions for Ontario* (2003), and *Old Growth Conservation Requirements for Forest Management Planning* (Forest Management Planning Note) (Draft March, 2003).

2.6 Summary of Renewal, Tending and Protection Operations

Trend Analysis Table 6 provides a summary report of planned and actual renewal, tending and protection operations. The information for the two previous terms was obtained from the 1994-1999 RPFO and FMP-25 in the 1999 FMP and from the ten-year report in 2003-2004. Information for the current term has been extracted from ???

Prior to establishment of the Renewal Trust Fund in 1995, the Crown Management Units did not receive sufficient funding to complete all planned required silviculture work. Since 1995, when the Renewal Trust Fund was established, tree planting has increased from approximately 900,000 seedlings/year to an average of 1.5 million seedlings/year. Secure funding has also made it possible to time mechanical site preparation in harvested white pine stands during years of good cone crops. This was not possible prior to the Renewal Trust Fund as the MNR was only provided with funds on an annual basis for use during that fiscal year.

Table 6 summarizes the total area in the 1999-2004 FMP planning term where silviculture operations occurred or where areas were scheduled for natural regeneration. In summary, a total of 50,587 ha of productive forest area were reported in Renewal, Tending and Protection excluding area that has been clearcut and scheduled for natural regeneration. A total of 5340 ha of area harvested using the clearcut silviculture system has been scheduled for natural regeneration (i.e. no expenditures for Renewal or Tending).

The increase in areas being artificially regenerated through planting is being used to rehabilitate poplar, white birch and conifer mixed wood stands to their original designation of white pine and red pine. This has been an objective in the past two forest management plans to increase the amount of area in the white and red pine forest unit in an effort to make the overall forest composition more similar to what it likely was during pre-settlement times.

For the 1999-2004 term in general, Renewal Uneven-Aged Management and Even-Aged Management Natural Regeneration, table AR-6 (1996 FMPM) demonstrates tree-marking accomplishments only (not actual harvesting numbers). The intention is to maintain table AR-6 (1996 FMPM) as the report of tree marking accomplishments on an annual basis, and table AR-2 (2004 FMPM) as the report of actual harvest areas for the same operating period. Table AR-7 (2004 FMPM) has remained consistent with this approach for this report, however, new annual reporting submission requirements (November 15 for all reporting) will facilitate more accurate reporting of the prescribed natural regenerated areas – and will begin in the first year of reporting in the 2004-2009 FMP

Tending treatments exceeded the FMP forecast in 1999-2004 by a noteworthy margin, primarily due to the uneven-aged stand improvement work completed on 2506 hectares in the in the Hwd-SEL forest unit in 2003-2004. A total of 1,132 hectares of this treated area is where operators made special efforts to cut un-merchantable material (down to 10 cm) to reduce diseased and defective unacceptable growing stock (UGS) and promote natural regeneration of tolerant hardwoods. The balance of the uneven-aged stand improvement occurred where First Nation contractors completed 1,374 hectares of stand improvement work as part of the Loring Deer Yard Tolerant Hardwood Stand Improvement project. The objective of the project was focused on the long-term improvement of poor quality hardwood stands frequently encountered in the Loring Deer Yard area. Immediate benefits of the project included employment opportunities for First Nations people and the provision of winter browse for deer. The Forestry Futures Trust in conjunction with the Ontario Living Legacy Trust provided funding for the project. NFRM also funded a portion of the project in the form of prescription development, tree marking and supervision.

Over achievement in tending levels can also be attributed to additional area in even-aged stand improvement, completed by first nation contractors on the Nipissing forest throughout the term as part of the Living Legacy Trust funded Yellow Birch Restoration Project. The forest management objective of this project is to release and space understorey yellow birch that were established via tolerant hardwood strip cutting in Olrig township.

Areas scheduled for site preparation and both natural and artificial regeneration are generally below target levels outlined by the FMP – primarily due to the reduction in harvest levels over the course of the FMP term. Total area in these categories fell short of FMP target – but considering the level of harvest (51% of planned) the natural, artificial renewal and site preparation levels are adequate (all over 60%)

There has not been an insect pest control operation on this unit since the SFL was signed in 1996. In the 1990-1994 term, the ground application of insecticides was twice that planned because of a large infestation of the red headed pine sawfly. For these infestations the Leconte virus biological insecticide was used as an effective alternative to chemical insecticide. The red headed pine sawfly is still present in isolated red pine plantations on the Nipissing Forest. Forestry Canada, the MNR and the SFL are carefully monitoring this pest and if plantations are threatened, another insect control operation will be undertaken.

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Table 6 - SUMMARY OF RENEWAL, MAINTENANCE AND PROTECTION

Past and Current Plans

	1990-1994		1994-1999		1999-2004		2004-2009	
	Planned[1]	Actual[1]	Planned[2]	Actual[2]	Planned[3]	Actual[4]	Planned[5]	Actual[6]
Renewal								
Regeneration								
Uneven-Aged Management								
Modified Cuts in AOCs				371.3	6,646.0	254.2		
Selection Cut - Harvest	8,663.0	4.0	9,728.0	10,559.1	15,771.0	11,654.0	12,618.0	465.0
Total Uneven-Aged Manageme	**8,663.0**	**4.0**	**9,728.0**	**10,930.4**	**22,417.0**	**11,908.2**	**12,618.0**	**466.0**
Even-Aged Management								
Natural Regeneration								
Clearcut	17,028.0	15,368.0	18,477.0	2,899.6	9,174.0	5,340.0	12,328.0	
Strip Cut		60.0		3.5	298.0			
Seed Tree Cut	1,270.0	12,990.0	5,109.0	4,027.9	454.0	805.0	52.0	
Uniform Shelterwood Cut	4,226.0	5,570.0	12,370.0	9,461.2	10,679.0	11,026.0	15,958.0	1,364.0
Plantation Marking				106.2	200.0	41.2		
CLAAG				585.9	3,963.0	1,240.0	2,440.0	
Subtotal Natural	**22,512.0**	**33,994.0**	**35,956.0**	**17,327.6**	**24,157.0**	**18,452.2**	**30,778.0**	**1,364.0**
Artificial Regeneration								
Planting (ha)	72,943.0	4,407.0	3,800.0	4,247.8	9,513.0	6,172.0	11,179.0	1,481.0
No. of Trees (000's)		5,958,000	6,433,000	6,730,711	na	3,350.9		
Seeding (ha) Direct	80.0	363.0	36.0	234.5	500.0			
(ha) With Site Preparation	304.0	50.0	85.0					
Scarification	330.0							
Subtotal Artificial	**73,657.0**	**4,820.0**	**10,354.0**	**4,482.3**	**10,013.0**	**6,172.0**	**11,179.0**	**1,481.0**
Total Even-Aged Management	**96,169.0**	**38,814.0**	**46,310.0**	**21,809.9**	**34,170.0**	**24,624.2**	**41,957.0**	**2,845.0**
Total Regeneration	**104,832.0**	**38,818.0**	**56,038.0**	**32,740.3**	**56,587.0**	**36,532.4**	**54,575.0**	**3,310.0**
Site Preparation								
Mechanical	8,145.0	4,088.0	4,026.0	3,466.7	10,064.0	4,753.0	5,918.0	184.0
Chemical (Aerial/Ground)	367.0	307.0	725.0	210.9	225.0	963.0	4,047.0	51.0
Prescribed Burn	1,422.0	694.0	971.0	52.4	500.0	285.0	346.0	17.0
Total Site Preparation	**9,934.0**	**5,089.0**	**5,722.0**	**3,730.0**	**10,789.0**	**6,001.0**	**11,411.0**	**252.0**
Tending								
Cleaning								
manual	3,626.0	388.0	1,096.0	812.3	2,700.0	981.0	8,028.0	127.0
chemical - ground	982.0	640.0	2,208.0	630.5	3,400.0	281.0	6,205.0	
- aerial	294.0	3,149.0	4,410.0	2,597.6	2,550.0	1,258.0	1,200.0	43.0
mechanical				232.2		84.0		
prescribed burn					700.0			
Spacing, pre-commercial thinning, improvement cutting								
even-aged	2,064.0	171.0	3,655.0	2,089.4	1,000.0	3,098.0	5,865.0	432.0
uneven-aged	1,062.0	20.0	7,290.0	1,457.0	1,200.0	7,970.0	6,309.0	138.0
Cultivation		24.0		14.5				
Total Tending	**7,548.0**	**4,391.0**	**18,659.0**	**7,833.5**	**11,550.0**	**13,672.0**	**27,607.0**	**740.0**
Protection (Insect Pest Control)								
accelerated harvest								
salvage								
manual protection								
ground insecticide	206.0	517.0	771.0			8.0		
aerial insecticide								
Total Protection	**206.0**	**517.0**	**771.0**			**8.0**		

[1] Source: Table RPFO-7 1990-1994 RPFO

[2] Source: Table RPFO-7 1994-1999 draft RPFO

[3] Source: Table FMP-25 1999-2004 FMP

[4] Source: Table AR-7 2003-2004 Ten Year Annual Report

[5] Source: Table FMP-25 2004-2009 FMP

[6] Source: Table AR-7 2004-2005 Annual Report

2.7 Summary of Regeneration

In Trend Analysis Table 7, the harvested area for the five-year period 1991 to 1996 has been reported and amounts to 19,378 ha. It is recommended in Appendix C of the IFAPP to use a 10-year delay from the end of the audit period (2006) in harvest area reported, to address the time lag that occurs prior to the point when regeneration is assessed for success. GIS records from NFRM Inc.'s database have been used to summarize information required in this table. As Appendix C outlines, survey areas are to correspond to the same areas recorded as harvested in the period between 1991-1996 – this is best accomplished with a spatial exercise in the GIS records. Figure 15 summarizes data presented in Table 7.

As the table outlines – total area harvested under an even-aged silvicultural system in the period was 19,378 ha, 66.7% of which has been surveyed for regeneration success.

Of the surveyed area 11,909 ha were declared Free-to-Grow amounting to 97.2% success rate. It is important to note that some of the unsurveyed area harvested under the even-aged silvicultural system has had an over-storey update – but did not lend itself to regeneration establishment at time of survey. For instance – a shelterwood treatment that was surveyed, but had no significant regeneration to report on – was updated in the overstorey, but not as a free-to-grow survey. In other instances, areas prescribed as clearcut treatments, only received first pass removal – leaving a mature, fully stocked stand not necessarily fitting to a regeneration survey. In these cases, composition, height and stocking updates were made to the inventory. What should also be taken into consideration is lands designated by the Ministry as "class z" lands – backlogged area that the SFL must survey eventually, but is expected to take some time due to transition of the forest licence and all of its associated record keeping.

Total area harvested under uneven-aged silvicultural system in the period was 4711 ha, 99.9% of which was surveyed for regeneration success. Of the surveyed area 4706 ha were declared Free-to-Grow amounting to 100.0% success rate.

Throughout the 1999-2004 FMP plan term NFRM has endeavoured to collect regeneration data to help determine the success of silvicultural treatments. The FMP forecasted survey levels of approximately 19,371 ha in table FMP-28. The company database contains survey information for 76% of this forecast. Of the total surveyed hectares, 71% has met some regeneration standard.

Data was collected during the summer and autumn of 2000, 2001 and 2002. A survey program was not undertaken in 2003 recognizing a backlog of data entry that needed to be accomplished prior to collecting more field information. Silviculture survey was reported in the April submission of the 1999-2000, 2000-2001 and 2001-2002 Annual Reports and had not been reported again until 2003-2004. The regeneration assessment undertaking has had both challenges to overcome as well as successes. A significant challenge included the transition and associated learning curve brought about by the collection of FIM forest inventory attributes in contrast to the well-known, traditional FRI data – as well as adapting to shifting FIM requirements along the way.

Continuing the regeneration and silviculture effectiveness survey program throughout the 2004-2024 FMP is a high priority for the SFL. The development of data collection methodologies and procedure streamlining throughout the 1999-2019 FMP will result in efficient and effective regeneration monitoring into the future. Silvicultural effectiveness is a fundamental consideration when discussing renewal and tending operations. NFRM has taken steps to increase the robustness of its silviculture data and effectiveness monitoring with the hiring of an additional staff to focus solely on silvicultural planning, and effectiveness monitoring. One consistent co-ordinator of silviculture effectiveness monitoring on the Nipissing Forest will help achieve new levels of treatment analysis.

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Table 7 - Harvested Area Successfully Regenerated - Summary of All Forest Units

	AREA IN HECTARES (All Forest Units Combined)	AREA IN HECTARES (All Forest Units Combined)
	Even-aged Management	**Uneven-aged Management**
Total Area Harvested	19,378	4,711
Total Area Surveyed for Regeneration Success	12,250	4,706
Total Unsurveyed Area	7,128	5
Total Area Declared Successfully Regenerated	11,909	4,706
Total Area Surveyed Not Successfully Regenerated	-	-
NSR	-	-
B&S	-	-
Not Available for Regen. (eg. Roads & landings)	-	5
Other	-	-
Percent of Area Surveyed Declared Successfully Regenerated	97.2%	100.0%

Source:

Total area harvested: NFRM Inc. GIS Database Records

Survey results: NFRM Inc GIS Database Records

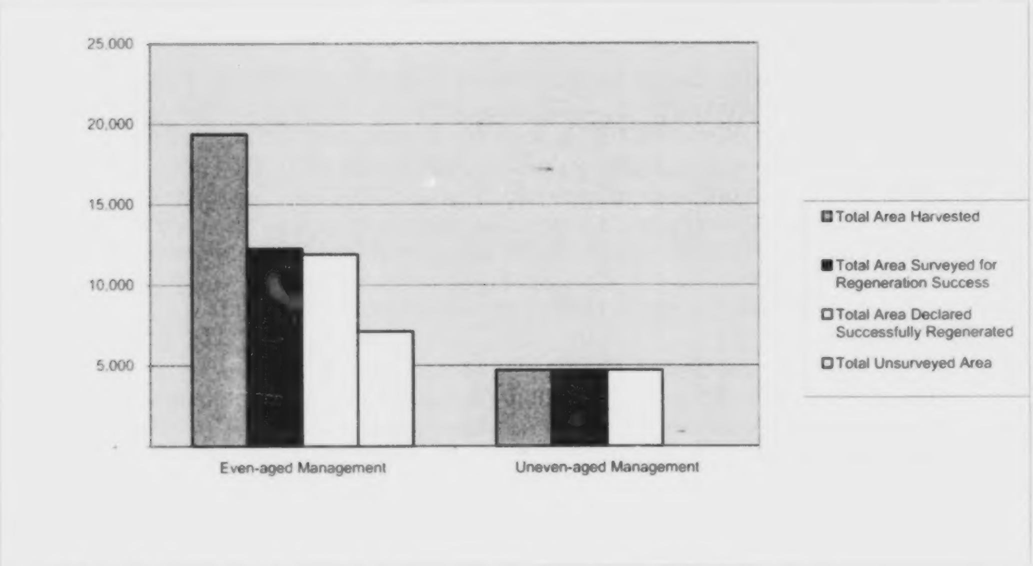

Figure 15 Harvest Area Successfully Regenerated – Summary of All Forest Units.

3.0 1999-2004 Objectives and Strategies

At the time of Trend Analysis preparation, only one year of reporting had been completed for the current FMP term, making it difficult to assess current objectives. The following section summarizes objective achievements for the Nipissing Forest 1999-2004 forest management plan, where measurable targets were present. In the absence of measurable targets, qualitative assessment of each objective is provided.

3.1 Objectives Associated with Forest Diversity

1) Maintain a range of age classes over time in all forest units; approach a more balanced age class distribution for each forest unit.

As discussed previously with the trends of Table 5, it is difficult to assess achievement of objectives with intentions of being measured over a much longer period than 15 years – especially in light of the constantly changing forest unit classifications from plan to plan. It can be said with certainty however, that allocations on the landscape have followed the trends identified in the SFMM to equalize the range of age classes as much as possible. What has deviated from this objective is the level of actual harvest on the landscape in these allocations, potentially causing imbalance in age class over time.

2) Within 100 years, create a distribution of forest units more similar to that at the time of pre-logging and pre-fire suppression. Historic records and recent forest management practices indicate that there was more white pine and red pine in the past than there is now.

Modelling outputs forecast an increase in the red and white pine uniform shelterwood forest unit from 21,500 hectares to 31,500 hectares over the 100 year modeling period. Noted in the trends analysis of Table 1, increases of 4% and 17% in white and red pine working groups is a direct result of FMP objectives in the 1999 and 2004 FMP to rehabilitate Po, Bw, and Mw dominated areas back to original PW and PR forest units. Approximately 2500 ha artificial regeneration was planted with Red and White Pine species in the 1999-2004 term

3) Over the term of this plan, have at least one old growth red pine and white pine ecosystem protected in each site district for which the Nipissing Forest is responsible.

A goal to meet this objective was to increase the amount of area in the red and white pine uniform shelterwood forest unit, in age classes older than 121 years of age, from 650 hectares to 1000 hectares. Forest units have shifted to standard forest units in the 2004 FMP – making comparison difficult. New OLL Park and Protected Areas will protect undoubtedly contain much of the forest require to meet this objective. Also NFRM has requested a "gap analysis" from Ontario Parks to ensure there are no gaps in representation for all ecosystems. It is expected that this analysis will be completed in 2006.

3.2 Objectives Associated with Wood Supply

1) Produce a maximum sustainable supply of fibre for the wood using industries supplied by the Nipissing Forest on the available land base. The timber production target was based on the Regional Wood Supply and Disposition Strategy, February 1998, and on the sustainable harvest level as calculated by the Strategic Forest Management Model in this FMP. For this target, the calculated SFMM level was lowered to reflect historical harvest levels, current market conditions and spatial constraints.

Targets set for timber production in the FMP were 228,000 m^3 con/year and 342,000 m^3 hwd/year, for a total volume output of 570,000 m^3/year. Trends in Table 3 illustrate a total annual average volume of close to 400,000 m^3/year, with conifer totals approximately 90% of the target and hardwood totals approximately 55% of target. The primary reason for hardwood volume shortfalls is due to a continued absence of consistent markets for hardwood pulp from both tolerant and intolerant hardwood species.

Forestry Futures Projects - red pine plantation thinning, Loring Deer Yard stand improvement and the yellow birch restoration projects are all directed at improving the quality of wood available to improve the long term utilization level.

2) Maintain the current economic contribution of the Nipissing Forest to the local economy

Wood harvested on the Nipissing Forest maintained the local mills (within market restrictions). The majority of the silvicultural work performed was carried out by local Contractors (especially local Aboriginal Contractors). NFRM has a policy to purchase supplies & services locally

3.3 Objectives Associated with First Nation Social and Economic Development

1) Minimize the impact of forest operations on Aboriginal communities' traditional uses of the forest

100% of Native communities in or adjacent to the management unit actively participated in the forest management planning process. NFRM maintains open lines of communication will all First Nations with interests on the landbase (mainly through the Aboriginal Working Group)

2) Provide economic opportunities for Aboriginal communities within the Nipissing Forest

Targets included:

- Allocate 1.8% of the available harvest area to each of the three local Aboriginal communities, for a total allocation of 5.4 % of the available harvest area.
- The Ministry of Natural Resources recognizes that Nipissing First Nation is undertaking a feasibility study to utilize low quality Crown timber located in the

Nipissing Forest.

- The Ministry of Natural Resources and Nipissing Forest Resource Management support efforts by Aboriginal communities to achieve a more equal participation in the benefits derived from forest management including access to forest resources.
- There is some surplus volume identified in Table FMP- 24. This material may provide a number of business opportunities. Any requests or proposals for use of surplus wood are made through Section 24 of the CFSA.

This target has been exceeded as four Aboriginal communities now have harvesting rights on the Nipissing Forest. In addition to this, Nipissing First Nation has completed a Forest Management Plan for their Reserve, Dokis First Nation is currently working on preparing a forest management plan, and harvest area was identified at the end of the 2004 FMP and allocated to the Antoine First Nation. Each community has realized numerous fringe benefits both forestry and non-forestry related (for example the Mattawa North Bay Algonquin's use the financial benefits to pay for their office & day care facility).

3.4 Objectives Associated with Other Social and Economic Development

1) Protect cultural and spiritual values in the Nipissing Forest that are identified on the values map.

Numerous Stage 1 and Stage 2 Archaeological surveys completed, in many cases the effected Aboriginal Community participated in the assessments. No instances of trespasses into cultural heritage AOCs. Aboriginal Communities are encouraged to continue to identify their values at any time during the implementation of the FMP.

2) Minimize the impact of forest operations on recreation areas that are identified on the values map.

NFRM initiated a comprehensive AOC prescription development process open to.?? 38 Resource Stewardship Agreements (RSA) successfully negotiated in 2003 in preparation for the 2004 FMP. In-depth consultation and negotiation throughout the planning process and throughout the implementation of the 2004 FMP has assisted the Nipissing Forest Management activities to coincide with other opportunities on the landscape. Reasonable levels of communication have been maintained between NFRM Inc. , parks, recreational areas, and individual tourism business owners.

3.5 Objectives Associated with the Provision of Forest Cover

1) Manage forest cover in such a way that preferred habitat at the ecoregional level is not threatened for selected species on the Nipissing Forest. Moose and pileated woodpecker are the selected species on the Nipissing Forest.

Measures of achievement for this objective were targeted in the FMP to maintain the preferred habitat level for the selected species, Moose (winter habitat) 72,200 ha and Pileated woodpecker 167,300 ha. Table FMP-5 Plan Start for 2004-2009 FMP indicates

73,400 ha of Moose (winter) Habitat, and 267,800 ha of Pileated Woodpecker. The 1999 FMP identified 2 additional AOC prescriptions (over & above the Provincial requirements) – one to protect wetlands and the other to increase moose cover in clear-cuts over 100 ha. Winter browse availability improved in the Loring Deer Yard through stand improvement work.

2) Manage forest cover to maintain habitat levels for a range of representative species on the Nipissing Forest.

A non quantitative target developed for this objective was to maintain habitat availability consistent with the goals and direction as outlined in various provincial and district management guideline publication. More specific targets (1999 FMP) were also set to maintain the following preferred habitat level for the following representative species (measures extracted from plan start?? 2004 FMP):

Species	FMP Target (ha)	Measure (ha)
Eastern Redback Salamander	197,100	304,000
Broad-winged Hawk	216,700	246,600
Ruffed Grouse	22,000	50,700
Barred Owl:	90,400	133,500
Least Flycatcher	110,900	199,600
Ruby-crowned Kinglet	29,700	11,400
Blackburnian Warbler	157,800	209,300
White-throated Sparrow	14,200	79,800
Snowshoe Hare	15,200	28,900
Northern Flying Squirrel	93,900	17,100
Black Bear (foraging):	27,300	14,400
Black Bear (fall / winter	10,300	16,300
Marten	147,900	236,300
Deer (foraging	8,700	81,800
Deer (winter habitat)	76,700	82,900
Moose (foraging):	14,800	73,400

3) Provide for habitat for beaver and mink; this must be co-ordinated with protection of fish habitat to ensure there is no conflict with application of the fisheries guidelines

Limited opportunity made available due to very few water bodies being surveyed and identified as warm water. Further work on this is continuing in the 2004 FMP.

4) Protect fisheries habitat in the Nipissing Forest.

The stated strategy was to adhere to all applicable MNR guidelines and resource manuals related to fisheries habitat and other riparian areas and to develop area of concern prescriptions to protect fish habitat and wetlands potential affected by forest management activities. NFRM continues to work very closely on updating values with MNR staff in the North Bay District. NFRM provides numerous updates to values information stored by MNR staff.

5) Preserve the integrity of the Nipissing Forest for resource-based tourism at the landscape level and at the operational level.

NFRM Inc. continues to engage in persistent consultation and negotiation with Resource Based Tourism (RBT) Operators resulting in 38 RSAs on the Nipissing Forest. The comprehensive AOC prescription development process contained the creation of the Forest Management Plan is (sentence??) open to all stakeholders and public with interests involving any aspect of the Nipissing Forest's landscape. Protocols to update values information in MNR database are used to generate values map at time of plan production, to keep the public informed of the planning team's current knowledge of specific values on the management unit.

6) Maintain the habitat of species used by the trapping industry.

Allocations maintained preferred habitat for a wide variety of species (please refer to above wildlife targets) Both the 1999 FMP and the 2004 FMP included an AOC prescription to maintain wildlife biodiversity. This prescription is the direct result of input from local trappers who want to see some cutting along the shoreline of warm water to promote poplar and other hardwood regeneration – which in turn will provide food for beavers, which in turn creates small ponds utilized by moose and waterfowl. The application of this AOC prescription however has been limited. Most of the water on the Nipissing Forest has not been surveyed and as a result these water bodies are considered cold water and the prescription not applicable. A recent addition to the LCC, who is a trapper has been promoting the application of this AOC prescription and has been successful in getting the cold-water designation removed from several streams and ponds by the MNR.

3.6 Objectives Associated with Silviculture Practice

1) Deliver an effective silviculture program which will result in a continuous yield of forest crops of the species, quantity, and quality required by the wood-using industries for which the Nipissing Forest is a source of supply.

All funds received through the Renewal Trust were spent on silvicultural activities (no reduction in primary renewal rates during the implementation of the plan renewal rates for cedar and larch were reduce from $6.00 to $0.50 in 2003-04). In the course of the 1999-2004 operating term, over two million dollars in additional funding for silvicultural work was obtained from the Forestry Futures Trust for special silvicultural projects on the

Nipissing Forest. A system of permanent and temporary growth & yield plots were established to track silvicultural effectiveness. In addition to tracking effectiveness, support is being provided to a local greenhouse to improve their stock quality for more successful crop plantations on the Forest.

2) Increase the amount of higher value timber species and products by using silvicultural strategies that will best match species to site

Forestry Futures Projects for stand improvement in the Loring & Olrig Areas were directed at improving stand health and increasing the future value of the products obtained. Red oak plantations were established and efforts were made to utilize group selection techniques when higher value species such as red oak were present.

3) Harvest 16,252 ha (30%) using the shelterwood system; 16,986 ha (30%) using the selection system, and 22,694 ha (40%) using the clearcut system.

Measurable targets intended to determine achievement for this objective may not serve as accurate representation as numbers will reflect that only 51% of AHA was actually harvested. Proportional targets may be relevant, with shelterwood harvest totalling 8320.8 ha (43%), selection harvest totalling 7676.4 ha (29.5%), and finally clearcut harvest totalling 12227.7 ha (27.5%) of the overall harvested hectares.

4) Regenerate 56,587 ha of cutover, of which 46,574 ha is to be by natural regeneration and 10,013 ha by artificial regeneration.

Measurable targets in table AR-7 of the 2003-2004 ten-year report suggest 59% total regeneration of which 65% of natural target was met and 30% of artificial target was met. Target percentages reflect a lower than forecasted harvest area to apply treatments.

5) Tend 10,850 ha of existing plantations requiring treatment to attain Free-To-Grow status. Conduct stand improvement cutting and thinning on 1,200 ha of immature stands to improve growth and quality.

Measurable targets in table AR-7 of the 2003-2004 ten-year report suggest 2604 (20%) ha of tending occurred on the Nipissing Forest in the 1999-2004 term. Stand improvement treatments occurred in over 11,066 ha of even and uneven aged stands across the Nipissing Forest between 1999 and 2004.

Objective Achievement Conclusions

It is every planning team's intention to achieve objectives set out in the strategic direction of the forest management plan; however, with so many variables to shift the predictive capability of forest modelling, some targets may not be met the way in which they were intended. These shifts can also impede the means in (sentence??) which measure our successes (i.e. landbase fluctuations, forest unit and yield curve development). The planning team, in the preparation of the 2004 FMP recognized and addressed a number of areas for improvement. Benefits of this trend analysis and the 2006 independent forest audit will certainly be used as a tool for the 2009 Nipissing Forest Management Planning Team.

4.0 Assessment of Forest Sustainability

Reference is made in Appendix C to Criteria 7.4 of the 2006 IFA Process and Protocol and speaks to the requirement of reviewing forest sustainability trends using evidence provided in previous RPFOs. As mentioned in the introduction of the report, the 2003-2004 ten-year report for the Nipissing Forest has been completed for the term in accordance with the phase-in requirements of the 2004 FMPM, and provides insight regarding the sustainability of management practices on the Forest. The following text has been summarized from the ten-year report and explores the forest sustainability trends as of 2004.

The 1996 FMPM (Section 4.3) details that five forest sustainability criteria in particular, are to be considered when assessing the sustainability of a forest management plan. These are summarized in Figure C-1, and include:

a) *Biodiversity*
b) *Forest Condition and Ecosystem Productivity*
c) *Multiple Benefits to Society*
d) *Soil and Water Conservation*
e) *Accepting Society's Responsibility for Sustainable Development*

For each of the five criteria the FMPM has outlined measurable indicators used to guide the forest management process – allowing the planning team to quantify the current forest condition in order to assess management alternatives and their potential effect on the forest's current state. The indicators fall into the following categories and measured in the remaining tables in this report:

a) *Managed Crown Forest Area Available for Timber Production*
b) *Landscape Pattern or Forest Diversity Indices*
c) *Habitat for Selected Wildlife Species*
d) *Forest Productivity*
e) *Percent of Available Harvest Area which is Actually Utilized/Multiple Benefits to Society*

4.1 Managed Crown Forest Area Available for Timber Production

A summary of managed forest area available for timber production is illustrated in the 2003-2004 ten-year report. Meaningful results are difficult to extract from the provided information, as the purpose of this table is to analyze multiple planning terms over a longer period of time. What can be noted from the information on this table, is a loss in area available for timber production, This table shows that the selected course of action for this management plan would decrease the available forest from 559,507 ha to 546,034 ha, decrease rationalized by accumulating reserves, and roads and landings, and is typical of other forests being managed in Ontario.

When the 1999 FMP was written, Table FMP-3 showed that there were 559,507 ha available for timber production and it was projected that this would decrease to 546,034 ha by 2099; that would have been a 13,473 ha decrease over 100 years. The forest available for timber production has decreased by more than this amount in the five years since the last plan was written. Decreases in the managed forest together with areas that had been deferred from harvest in the last plan have resulted in a large area going from the managed landbase into parks and other protected areas. The social, economic and environmental aspects of sustainability require that the amount of area in both parks and other protected areas and on the managed landscape must be balanced to achieve the desired level of benefits from the forest.

4.2 Landscape Pattern or Forest Diversity Indicators

Landscape pattern indices and forest diversity indices serve as indicators of biodiversity and wildlife habitat. Analytical models use these indices to express variety in forest structure, pattern, and composition. The data contained within the 2003-2004 ten-year report is intended to be built over successive plan terms to show trends over time to provide some insight into the changing index levels. As this is the first plan term being reported, there is little data to compare or assess.

The landscape metrics, predicted by the model are to remain within acceptable ranges of variation of selected management alternative. The figures report on the predicted values in the 1999 FMP, and the actual values that were calculated in the 2004 FMP for the current forest condition. The non-spatial measure of forest units, being the Shannon Weiner, the Simpson's and the Shannon Evenness Indexes are all within the acceptable levels at the completion of the 1999-2004 term.

The overall change in landscape pattern is considered acceptable. Landscape pattern is an indicator of biodiversity that describes the composition and configuration of a landscape. Composition refers to the presence and amount of any one particular patch type, while configuration refers to the spatial arrangement of those associated areas of patches. These values will serve as important benchmark information to further our understanding of landscape pattern and landscape pattern change in the future.

4.3 Habitat for Selected Wildlife Species

Habitat supply for these wildlife species listed in the table was modeled non-spatially using OMNR's Strategic Forest Management Model (SFMM). There is no single measure that can tell us whether a forest is being managed sustainability, but carefully selected species can be a valuable indicator of whether forest management is proceeding on a sustainable course, from the perspective of providing habitat for wildlife.

The habitat supply for the selected species is documented in the report, showing the habitat that was predicted in the 1999 FMP, and also the actual habitat calculated at the start of the 2004 FMP.

As this is the first plan term being reported for the Nipissing Forest designed by the 1996 FMPM standard, there is little data to assess for trends. Table FMP-5 in the current (2004) FMP shows how habitat has changed from last term and how it is expected to change over the 100 year modelling period. Some changes since last term appear quite large, but most of the changes can be attributed to inventory updates since the last plan. There were 30,000 ha depleted due to harvest activity over the last five years, area added as a result of free-to-grow surveys, and an update in the area treated with the selection and shelterwood systems. In addition, the wildlife habitat matrices in SFMM have been updated, as has the method for calculating ecosite in SFMMTool. The differences between planned and actual amounts of habitat could likely be reflecting differences in the habitat types identified as "preferred" for these wildlife species in MNR's old and new habitat matrices.

Pileated woodpecker habitat has increased since last term, but it will decrease next term and will continue to do so until term 7, when it starts to increase; like the null scenario, it is not expected to return to current levels. Moose foraging habitat has increased since last term and it continues to stay above the level of the null scenario throughout the modelling period for the 2004 FMP.

Decrease in habitat for ruffed grouse and ruby-crowned kinglet was identified as an issue in the last plan because of a projected decline in habitat. A decline did occur for both species since the implementation of the 1999 plan. Habitat projections for these two species are no longer an issue as the 2004 FMP shows that projected habitat levels stay well above the sustainable level.

Habitat levels increase over the next 100 years for 11 of the habitat types, and there is a decrease in seven habitat types. Section 2.2.4.1 in the 2004 FMP describes wildlife on the Nipissing Forest in more detail, as does Section 10.1, where strategies to protect wildlife habitat are discussed.

4.4 Forest Productivity

Landscape processes of evapo-transpiration, water runoff and net carbon assimilation can be summarized through values for net primary productivity and water yield, and serve as measurable indicators for the forest sustainability criteria of Forest Condition and Ecosystem Productivity and Water Conservation, respectively.

Carbon dioxide is used and produced by photosynthesizing plants. The extent to which the rate of carbon used exceeds carbon given off (net canopy carbon assimilation) is a measure of net primary productivity, and is expressed in kg of Carbon / ha / year. The model RHESSys (Regional Hydro Ecological Simulation System) was used which is a landscape level data processing and simulation system for estimating forest carbon and water cycling. This data was supplied by the MNR. To calculate change from previous plan, MNR provided average numbers for 1993-1996 for the last plan and 1997-2000 for the current plan. The calculations show a 16% increase in net primary productivity since the last plan. This change in net primary productivity does not necessarily indicate a change in sustainability and biodiversity; major disturbances generally cause increases in net primary productivity; a lack of disturbance may lead to decreased forest vigor, which decreases net primary productivity and could mean sustainability is jeopardized and biodiversity is decreased.

Water yield is a function of two major variables: evapo-transpiration and runoff. Water yield is directly affected by the amount of watershed area clearcut or burned within the last 10 years. Due to the relatively extensive amount of selection and shelterwood harvesting in the Nipissing Forest, only 3.5% of the area within the second order stream watersheds has been disturbed by clearcut or fire within the last ten years. This figure was calculated by dividing the net disturbed area originating within the past 10 years into the total area within the boundaries of the second order watersheds regardless of ownership type. An increase of 0.7% is noted from the previous FMP figure of 2.8%.

4.5 Percent of Available Harvest Area which is Actually Utilized/Multiple Benefits to Society

Total Productive Crown Forest managed in the 1999-2004 period totalled 582,859 ha and has decreased since, to a total of 549,320 ha in the 2004 forest management plan. Many of the same contributing factors as identified in section 2.1 analysis have contributed to this decrease – however the major factor being change in ownership from plan to plan.

As highlighted in other sections of this report, utilization on the forest could be improved from its current 50% overall figure. Values in this table are rationalized much the same way is in sections 2.3 and 2.4.

Of the native communities on or adjacent to the Nipissing Forest, all participate to a great extent in the forest management planning process.

4.6 Conclusion

Using the available information applied in this report, indication that the Nipissing Forest has been and continues to be managed in a sustainable manor. Most analysis performed in historic documents is aspatial in nature, and therefore is limited in its accuracy to determine shortfalls. Using developing spatial techniques and the accumulation of GIS information – the future of assessing sustainability will be more robust in its conclusions. In spite of their aspatial nature– the indicators of sustainability do not reveal any excessive variation.

APPENDIX 1
Table 5a, 5b, 5c and 5d

2006 Independent Forest Audit - Nipissing Forest

Table 5a - SUMMARY OF MANAGED PRODUCTIVE FOREST BY FOREST UNIT

2004-2009 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)
BW	B&S						6,112.2	
	0-10		0.0	0.0	0.0		398.5	0.0
	11-20		0.0	6.4	0.0		1,164.7	0.0
	21-30		0.0	2.6	19.8		536.2	3,753.2
	31-40		0.0	9.6	286.9		1,775.7	55,047.1
	41-50	15.1	906.0	0.7	42.3		2,379.3	142,757.1
	51-60	30.5	2,501.0	76.2	6,248.0		5,565.2	456,348.4
	61-70	117.1	12,175.3	193.0	20,071.6		14,233.4	1,480,269.6
	71-80	119.1	14,411.1	306.9	37,129.6		18,939.9	2,291,725.6
	81-90	212.6	28,485.7	142.7	19,119.4		8,491.2	1,137,824.9
	91-100		0.0	1.5	260.6		2,775.7	396,920.5
	101-110	36.2	5,285.2	4.4	642.7		319.7	46,680.2
	111-120			21.4			321.0	
	121-130			0.0			197.5	
	131-140			0.0			18.5	
	141-150							
	151-160							
	161-170							
	171-180							
	181-190		0.0		0.0		8.0	392.0
	191-200		0.0		0.0			0.0
	200+		0.0		0.0			0.0
		530.6	**63,764.3**	**765.8**	**83,831.2**	**0.0**	**63,236.7**	**6,011,718.7**
BY	B&S		0.0	0.0	0.0		607.0	0.0
	0-10							
	11-20		0.0	0.0	0.0		15.0	0.0
	21-30		0.0	0.0	0.0		385.7	385.7
	31-40		0.0	0.0	0.0		79.5	476.8
	41-50		0.0	0.0	0.0		91.1	2,277.5
	51-60		0.0	0.0	0.0		194.4	10,108.3
	61-70		0.0	0.0	0.0		816.8	62,076.8
	71-80		0.0	12.4	1,278.1		718.9	74,050.9
	81-90		0.0	21.5	2,704.7		1,641.8	206,866.0
	91-100		0.0	16.9	2,432.3		2,517.9	362,577.5
	101-110		0.0	16.4	2,619.6		1,800.3	288,041.2
	111-120		0.0	12.2	2,026.6		929.9	154,360.2
	121-130		0.0	9.7	1,578.2		691.3	112,688.0
	131-140		0.0	34.3	5,488.1		655.7	104,911.9
	141-150		0.0	0.0	0.0		584.3	92,314.7
	151-160			0.0			57.4	
	161-170			0.0			295.4	
	171-180			2.4			6.1	
	181-190		0.0		0.0		239.1	36,582.3
	191-200		0.0		0.0		25.0	3,798.5
	200+		0.0		0.0		37.5	5,667.0
		0.0	**0.0**	**125.7**	**18,127.8**	**0.0**	**12,390.1**	**1,517,183.3**
HDUS	B&S						250.0	
	0-10		0.0		0.0			0.0
	11-20		0.0	0.0	0.0		81.2	0.0
	21-30		0.0	0.0	0.0		258.9	776.6
	31-40		0.0	1.9	20.5		183.3	2,016.8
	41-50		0.0	1.2	39.1		1,012.9	33,426.2
	51-60		0.0	39.0	2,223.5		2,028.9	115,647.9
	61-70		0.0	4.3	373.7		3,330.4	289,745.2
	71-80	28.4	3,124.0	91.5	10,066.9		8,765.4	964,191.0
	81-90	103.3	13,429.0	59.7	7,759.8		7,389.0	960,572.5
	91-100	486.1	71,939.6	14.0	2,068.8		6,046.6	894,898.5
	101-110	7.8	1,240.2	18.7	2,973.3		2,612.5	415,385.9
	111-120		0.0	1.4	236.3		2,001.5	326,247.8
	121-130		0.0	0.2	31.3		1,473.2	231,290.9
	131-140		0.0	4.4	659.9		752.5	112,124.2
	141-150		0.0	0.0	0.0		772.1	111,185.3
	151-160		0.0	0.0	0.0		324.8	46,124.4
	161-170		0.0	1.8	264.4		246.3	34,721.9
	171-180		0.0	4.6	649.8		123.6	17,327.6
	181-190		0.0		0.0		73.1	10,238.2
	191-200		0.0		0.0		23.3	3,237.3
	200+	21.7	3,016.3		0.0		58.5	8,137.1
		647.3	**92,749.3**	**242.8**	**27,367.3**	**0.0**	**37,808.3**	**4,577,295.4**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
HE	B&S						319.0	
	0-10		0.0		0.0			0.0
	11-20		0.0		0.0			0.0
	21-30		0.0		0.0			0.0
	31-40		0.0		0.0			0.0
	41-50		0.0		0.0			0.0
	51-60		0.0		0.0		30.8	1,569.3
	61-70		0.0		0.0		8.7	716.7
	71-80		0.0		0.0		163.5	17,325.7
	81-90		0.0		0.0		278.0	35,867.2
	91-100		0.0		0.1		131.4	19,448.7
	101-110	12.1	1,979.5	2.6	429.7		1,217.0	199,589.6
	111-120		0.0	0.0	0.0		1,086.8	185,837.7
	121-130		0.0	0.3	50.6		793.0	137,195.5
	131-140		0.0	27.2	4,644.1		1,412.5	241,529.2
	141-150	39.2	6,704.9	2.1	363.9		853.2	145,895.8
	151-160		0.0	14.9	2,526.4		507.0	85,686.5
	161-170		0.0		0.0		715.1	120,855.3
	171-180	50.6	8,450.2		0.0		398.8	66,504.6
	181-190		0.0		0.0		4.2	694.7
	191-200		0.0		0.0		117.2	19,451.9
	200+	87.3	14,488.5	0.0	0.0		616.8	102,390.5
		189.2	**31,623.1**	**47.1**	**8,014.7**	**0.0**	**8,652.9**	**1,380,648.7**
LWMX	B&S						249.0	
	0-10		0.0		0.0			0.0
	11-20		0.0		0.0		312.5	0.0
	21-30		0.0		0.0		145.9	437.6
	31-40		0.0		0.0		52.6	631.2
	41-50		0.0		0.0		501.0	13,526.5
	51-60		0.0	20.9	938.4		2,262.9	101,830.8
	61-70	13.8	9[illegible]6.6	10.1	674.6		3,317.2	222,253.9
	71-80	10.7	921.9	41.6	3,574.4		4,752.7	408,735.4
	81-90	144.1	14,842.3	22.8	2,350.7		3,393.0	349,477.7
	91-100	9.1	1,060.0	60.2	7,049.1		4,033.0	471,859.9
	101-110	21.5	2,687.5	24.8	3,103.9		3,040.1	380,017.4
	111-120	15.2	1,887.3	3.0	372.7		538.1	66,727.4
	121-130	7.8	855.8	1.7	188.7		235.1	25,858.2
	131-140		0.0	0.0	0.0		39.5	3,912.5
	141-150		0.0	27.9	2,534.4		389.8	35,474.5
	151-160		0.0		0.0		35.9	3,161.0
	161-170		0.0		0.0		107.5	9,355.1
	171-180		0.0		0.0		81.8	7,112.3
	181-190		0.0		0.0			0.0
	191-200		0.0		0.0			0.0
	200+		0.0		0.0		56.0	4,648.0
		222.2	**23,181.4**	**213.0**	**20,787.0**	**0.0**	**23,543.7**	**2,105,019.2**
MCL	B&S						8,447.9	
	0-10		0.0		0.0		152.2	0.0
	11-20		0.0		0.0		107.4	214.8
	21-30		0.0		0.0		21.0	188.6
	31-40		0.0		0.0		20.7	454.3
	41-50		0.0		0.0		95.8	3,833.6
	51-60		0.0		0.0		277.3	16,358.3
	61-70	6.4	489.0		0.0		694.6	53,484.2
	71-80	7.1	664.0	47.8	4,446.7		1,484.4	138,050.7
	81-90	86.5	9,342.0	72.8	7,858.5		3,921.7	423,542.1
	91-100	45.7	5,259.0	78.1	8,978.2		3,636.0	418,141.0
	101-110	76.3	9,156.0	36.2	4,349.1		2,687.6	322,532.1
	111-120	21.2	2,584.0	7.1	864.8		1,490.2	181,802.1
	121-130		0.0	8.4	1,005.0		1,042.9	124,108.0
	131-140	59.1	6,800.0	9.2	1,058.4		457.8	52,648.9
	141-150		0.0	4.5	508.0		176.7	19,785.3
	151-160		0.0	0.0	0.0		154.0	15,863.0
	161-170		0.0	4.8	453.6		118.6	11,267.5
	171-180		0.0		0.0			0.0
	181-190		0.0		0.0			0.0
	191-200		0.0		0.0			0.0
	200+		0.0		0.0		3.6	217.2
		302.3	**34,293.8**	**258.9**	**29,522.3**	**0.0**	**24,990.5**	**1,782,491.9**
MW	B&S						137.1	
	0-10		0.0		0.0		11.7	0.0
	11-20		0.0	7.0	0.0		678.4	0.0
	21-30		0.0	4.1	36.9		597.2	5,375.1
	31-40		0.0	8.8	238.1		1,531.5	41,350.8
	41-50	38.3	1,875.2	20.0	981.5		3,749.3	183,716.7
	51-60	22.1	1,592.6	101.6	7,316.1		8,611.5	620,025.7
	61-70	186.3	17,507.5	220.5	20,724.6		15,096.2	1,419,046.2
	71-80	258.6	28,709.0	408.3	45,318.0		17,673.3	1,961,741.8
	81-90	161.9	20,561.3	198.4	25,199.7		14,565.2	1,849,777.5
	91-100	46.4	6,351.3	101.0	13,842.5		4,529.9	620,594.9
	101-110		0.0	41.4	6,009.2		3,478.5	504,382.1
	111-120	38.0	5,320.0	100.3	14,046.9		1,669.8	233,775.5
	121-130		0.0	0.4	50.2		427.0	50,381.8
	131-140		0.0	1.2	110.0		613.3	57,650.2
	141-150		0.0	4.0	340.3		70.2	5,965.0
	151-160		0.0	0.0	0.0		295.4	23,337.4
	161-170	13.8	1,035.0	11.3	850.9		44.4	3,326.6
	171-180		0.0		0.0			0.0
	181-190		0.0		0.0			0.0
	191-200		0.0		0.0			0.0
	200+		0.0					0.0
		765.3	**82,952.0**	**1,228.5**	**135,064.7**	**0.0**	**73,779.9**	**7,580,447.3**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)
PJ	B&S						3,310.0	
	0-10		0.0		0.0		106.4	106.4
	11-20		0.0		0.0		1,691.2	38,896.7
	21-30		0.0		0.0		191.7	12,457.9
	31-40		0.0		0.0		15.4	1,744.7
	41-50		0.0		0.0		82.5	12,533.9
	51-60	3.7	677.1		0.0		168.0	30,910.2
	61-70		0.0		0.0		553.8	113,522.9
	71-80	78.6	17,283.2	180.1	39,618.0		3,008.0	661,764.0
	81-90	62.3	14,086.6	15.8	3,579.9		1,594.7	360,393.1
	91-100	28.8	6,513.3		0.0		72.0	16,267.5
	101-110	0.3	65.7		0.0		76.4	16,740.4
	111-120						4.7	
	121-130						3.2	
	131-140						8.3	
	141-150							
	151-160							
	161-170							
	171-180							
	181-190		0.0		0.0			0.0
	191-200		0.0		0.0			0.0
	200+		0.0		0.0			0.0
		173.7	**38,625.9**	**195.9**	**43,197.9**	**0.0**	**10,886.1**	**1,265,337.5**
PJSB	B&S							
	0-10		0.0		0.0		139.0	0.0
	11-20		0.0		0.0		35.4	141.5
	21-30		0.0		0.0		99.6	1,692.4
	31-40		0.0		0.0		237.6	8,554.3
	41-50		0.0		0.0		467.9	29,007.9
	51-60		0.0	5.3	458.2		1,332.2	115,897.3
	61-70		0.0	6.9	745.5		3,910.6	422,342.3
	71-80	77.8	9,730.0	99.8	12,473.7		5,346.1	668,256.3
	81-90	52.0	7,174.6	93.7	12,924.9		1,957.9	270,193.2
	91-100	13.9	1,998.7	13.4	1,934.4		891.2	128,333.8
	101-110	48.2	6,942.2	83.9	12,079.2		45.3	6,528.5
	111-120			12.2			150.7	
	121-130	46.5	6,131.0					
	131-140						18.7	
	141-150							
	151-160							
	161-170							
	171-180							
	181-190							
	191-200		0.0		0.0			0.0
	200+				0.0			0.0
		238.4	**31,976.6**	**315.1**	**40,615.8**	**0.0**	**14,632.1**	**1,650,947.5**
PO	B&S						9,287.7	
	0-10		0.0		0.0		1,117.0	0.0
	11-20		0.0	51.5	309.1		1,676.0	10,055.9
	21-30		0.0	1.0	24.6		1,700.0	42,501.1
	31-40		0.0	13.3	676.9		1,251.1	63,806.9
	41-50	0.4	32.8	9.6	748.0		808.5	63,059.9
	51-60	12.5	1,262.5	4.0	403.0		2,484.0	250,882.0
	61-70	196.0	23,916.9	70.3	8,573.8		7,087.8	864,713.2
	71-80	160.9	21,877.0	192.3	26,146.2		8,797.0	1,196,397.2
	81-90	77.1	10,945.4	40.3	5,728.1		7,126.3	1,011,934.8
	91-100		0.0	17.6	2,520.0		838.0	119,840.8
	101-110	6.5	923.0	0.0	0.0		238.6	33,885.5
	111-120			0.0			86.1	
	121-130			5.9			13.4	
	131-140			3.2			24.7	
	141-150							
	151-160							
	161-170							
	171-180							
	181-190							
	191-200		0.0		0.0			0.0
	200+		0.0		0.0			0.0
		453.4	**58,957.5**	**408.9**	**45,129.8**	**0.0**	**42,536.4**	**3,657,077.3**
PR	B&S						2,748.0	
	0-10		0.0		0.0		22.0	0.0
	11-20		0.0	0.5	1.8		2,384.9	9,157.8
	21-30		0.0	0.4	20.9		3,086.5	179,480.6
	31-40		0.0	0.0	0.0		1,070.6	143,815.0
	41-50	1.8	368.5	0.0	0.0		546.0	110,538.5
	51-60		0.0	10.1	2,573.1		551.9	140,873.8
	61-70		0.0	0.0	0.0		24.4	7,197.7
	71-80		0.0	0.9	306.3		220.0	71,380.6
	81-90	25.3	8,674.1	0.0	0.0		265.2	90,923.8
	91-100			9.0			36.0	
	101-110			5.9			42.8	
	111-120			8.0			79.5	
	121-130			2.1			0.5	
	131-140							
	141-150						2.4	
	151-160							
	161-170							
	171-180							
	181-190							
	191-200		0.0		0.0			0.0
	200+		0.0		0.0			0.0
		27.1	**9,042.6**	**36.9**	**2,902.1**	**0.0**	**11,080.7**	**753,368.0**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
PWST	B&S						3,383.0	
	0-10		0.0	0.0	0.0		121.3	0.0
	11-20		0.0	2.5	39.8		887.0	14,192.7
	21-30		0.0	0.0	0.0		1,766.6	61,830.0
	31-40		0.0	1.1	61.7		1,288.0	74,704.3
	41-50	7.0	574.0	2.1	172.3		650.0	53,301.5
	51-60	4.7	497.7	3.2	331.0		634.4	66,611.8
	61-70		0.0	2.4	296.1		1,018.9	125,325.0
	71-80	64.8	9,003.0	33.7	4,682.8		2,569.3	357,130.1
	81-90	36.3	5,517.6	25.5	3,869.3		3,197.5	486,026.7
	91-100	9.9	1,613.7	84.1	13,703.3		2,360.9	384,833.3
	101-110	17.2	2,95[illegible].0	141.9	24,406.4		1,773.5	305,040.7
	111-120		0.0	57.7	10,320.3		1,100.9	197,058.3
	121-130		0.0	32.9	6,117.7		603.1	112,169.0
	131-140		0.0	1.9	359.5		259.7	49,079.2
	141-150		0.0	0.0	0.0		142.0	27,254.4
	151-160		0.0	0.0	0.0		6.3	1,245.0
	161-170		0.0	7.2	1,422.7		4.9	959.0
	171-180						49.1	
	181-190							
	191-200		0.0		0.0		22.8	4,436.3
	200+		0.0		0.0			0.0
		139.9	**20,161.0**	**396.0**	**65,782.9**	**0.0**	**21,839.1**	**2,321,197.2**
PWUS	B&S						3,308.0	
	0-10		0.0		0.0		106.5	106.5
	11-20		0.0		0.0		4,697.5	93,949.6
	21-30		0.0		0.0		2,101.7	98,777.6
	31-40		0.0		0.0		1,371.5	106,979.3
	41-50	31.7	3,457.5		0.0		1,868.1	203,625.1
	51-60		0.0		0.0		1,527.0	210,719.1
	61-70		0.0	1.4	237.8		1,116.6	183,122.4
	71-80	11.5	2,116.0	101.5	18,674.6		3,858.8	710,020.6
	81-90	22.8	4,651.2	59.4	12,117.2		7,480.0	1,525,912.3
	91-100	10.1	2,211.9	222.2	48,668.3		9,307.9	2,038,423.6
	101-110	40.1	9,263.1	201.8	46,612.9		10,432.3	2,409,861.9
	111-120	38.1	9,182.1	240.6	57,980.7		7,091.0	1,708,939.7
	121-130	9.8	2,420.6	75.0	18,534.5		2,098.0	518,216.2
	131-140	6.4	1,632.0	65.9	16,801.5		1,230.6	313,795.8
	141-150		0.0	17.3	4,488.4		497.3	128,805.9
	151-160		0.0	2.4	609.7		235.2	60,920.9
	161-170		0.0	0.0	0.0		129.1	33,945.4
	171-180		0.0	7.4	1,958.8		174.5	45,888.8
	181-190		0.0		0.0		6.9	1,798.3
	191-200		0.0		0.0		10.9	2,821.9
	200+		0.0		0.0		59.2	15,088.4
		170.5	**34,934.4**	**995.0**	**226,684.4**	**0.0**	**58,708.5**	**10,411,718.4**
SF	B&S						4,072.9	
	0-10		0.0		0.0		65.0	0.0
	11-20		0.0		0.0		895.1	1,790.2
	21-30		0.0		0.0		369.6	4,435.7
	31-40		0.0		0.0		1,075.0	32,251.2
	41-50		0.0	42.7	2,090.0		1,757.2	86,104.6
	51-60		0.0	79.5	5,323.4		4,329.0	290,041.4
	61-70		0.0	70.8	5,736.6		4,652.2	376,828.8
	71-80	31.7	2,853.0	116.0	10,441.4		8,110.7	729,962.5
	81-90	9.4	914.7	114.5	11,110.3		9,856.5	956,076.7
	91-100	39.2	3,878.8	57.7	5,713.2		7,141.1	706,966.1
	101-110	11.5	1,161.5	55.6	5,619.0		4,422.2	446,637.8
	111-120		0.0	24.5	2,498.9		1,589.9	162,171.0
	121-130	18.6	1,878.6	8.6	867.8		1,353.8	136,736.6
	131-140	51.5	5,257.1	0.0	1.4		635.0	64,773.7
	141-150	15.4	1,493.8	14.6	1,420.4		34.2	3,319.0
	151-160		0.0		0.0		168.9	15,705.8
	161-170		0.0		0.0		188.3	16,381.2
	171-180						29.2	
	181-190							
	191-200		0.0		0.0			0.0
	200+		0.0	16.7	1,085.8		114.6	7,449.3
Forest Unit Subtotal		**177.4**	**17,437.5**	**601.3**	**51,908.2**	**0.0**	**50,860.4**	**4,037,631.6**
HDSEL	All ages	72.4	0.0	398.4	0.0	0.0	84,024.1	0.0
Forest Unit Subtotal		**72.4**	**0.0**	**398.4**	**0.0**	**0.0**	**84,024.1**	**0.0**
	Total	**4,109.7**	**539,699.4**	**6,239.4**	**798,936.2**	**0.0**	**538,969.5**	**49,052,082.2**

Source:

Source: Table FMP-9 2004-2009 FMP

2006 Independent Forest Audit - Nipissing Forest
Table 5b - SUMMARY OF MANAGED PRODUCTIVE FOREST BY FOREST UNIT
1999-2004 FMP
Excludes Crown wood on Patent Land

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of	Available	
		(ha)	(m3)	(ha)	(m3)	lanagemer	(ha)	(m3)
BoC-CC	B&S						5,508.7	
	1-20			52.0			3,191.3	2,605
	21-40						958.4	43,716
	41-60	4.5		108.2	4,650		4,462.8	367,388
	61-80	147.9		90.4	4,961		25,879.9	3,175,139
	81-100	121.6		346.3	41,288		14,540.3	1,913,571
	101-120	12.5		3.1	828		1,559.4	199,139
	121-140						1,304.0	163,755
	141-160						72.9	4,807
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	**286.5**		**600.0**	**51,727**		**57,477.7**	**5,890,320**
MixCon-CC	B&S						1,649.3	
	1-20						4,346.9	43,402
	21-40	22.4		69.0	1,811		5,977.4	247,874
	41-60	290.9		365.3	25,993		26,557.2	2,147,941
	61-80	771.1		323.0	22,702		45,466.3	4,570,570
	81-100	220.1		399.3	31,329		23,284.2	2,531,971
	101-120	76.3		30.4	3,010		4,908.9	623,954
	121-140			12.6	920		1,441.8	132,183
	141-160			62.7	2,070		95.5	9,103
	161-180						98.2	7,966
	181-200						159.0	11,006
	201+						172.0	
	Forest Unit Subtotal	**1,380.8**		**1,262.3**	**87,835**		**114,156.7**	**10,325,970**
MixCon-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120							
	121-140							
	141-160					Final Rem	271.7	33,301
	161-180					Final Rem	180.6	20,438
	181-200							
	201+							
	Stage of Management Subtotal						**452.3**	**53,739**
MixCon-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120	9.8				First Rem	2,708.2	447,865
	121-140	15.8				First Rem	1,536.1	217,859
	141-160					First Rem	232.3	28,632
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**25.6**					**4,476.6**	**694,356**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of	Available	
		(ha)	(m3)	(ha)	(m3)	lanageme	(ha)	(m3)
MixCon-US	B&S							
	1-20					Prep. Cut	6,426.0	27,851
	21-40			356.0	16,411	Prep. Cut	6,121.0	263,612
	41-60			148.7	8,269	Prep. Cut	6,759.9	517,211
	61-80	23.2		310.6	32,638	Prep. Cut	3,616.8	375,833
	81-100							
	101-120							
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**23.2**		**815.3**	**57,318**		**22,923.7**	**1,184,507**
MixCon-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80	33.6		37.6	6,078	Seed Cut	6,313.2	695,861
	81-100	52.8		94.3	11,252	Seed Cut	17,733.7	2,588,492
	101-120			144.5	14,600	Seed Cut	5,655.3	973,118
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**86.4**		**276.4**	**31,930**		**29,702.2**	**4,257,471**
	Forest Unit Subtotal	**135.2**		**1,091.7**	**89,248**		**57,554.8**	**6,190,073**
Hwd-SEL	All	71.2		2,114.0	289,604		112,791.7	14,782,524
	Forest Unit Subtotal	**71.2**		**2,114.0**	**289,604**		**112,791.7**	**14,782,524**
Hwd-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100	212.1		31.1	4,138	Final Rem	3,727.3	381,331
	101-120	36.2		20.5	2,113	Final Rem	2,508.7	257,135
	121-140	52.4		21.8	1,440	Final Rem	1,881.3	179,225
	141-160			16.1	2,109	Final Rem	746.9	76,744
	161-180	50.5				Final Rem	73.0	8,174
	181-200	87.0				Final Rem	330.2	38,962
	201+	21.7				Final Rem	60.1	
	Stage of Management Subtotal	**459.9**		**89.5**	**9,800**		**9,327.5**	**941,571**
Hwd-US	B&S					First Remo	741.4	
	1-20					First Remo	175.7	757
	21-40					First Remo	632.2	16,218
	41-60					First Remo	3,549.0	230,875
	61-80					First Remo	9,527.0	900,040
	81-100	76.5		147.4	16,245	First Remo	5,319.0	565,530
	101-120							
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**76.5**		**147.4**	**16,245**		**19,944.3**	**1,713,420**
	Forest Unit Subtotal	**536.4**		**236.9**	**26,045**		**29,271.8**	**2,654,991**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of lanagemer	Available	
		(ha)	(m3)	(ha)	(m3)		(ha)	(m3)
HwdHe-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120							
	121-140			53.9	7,269	Final Rem	3,985.5	621,214
	141-160			55.9	7,881	Final Rem	1,232.6	177,856
	161-180					Final Rem	568.8	85,370
	181-200					Final Rem	247.5	
	201+					Final Rem	182.0	
	Stage of Management Subtotal			**109.8**	**15,150**		**6,216.4**	**884,440**
HwdHe-US	B&S					First Rem	190.0	
	1-20			5.6		First Rem	15.0	
	21-40					First Rem	506.5	1,593
	41-60			8.0	632	First Rem	1,026.9	73,042
	61-80	7.9		221.4	30,175	First Rem	3,237.8	424,592
	81-100	7.4		129.8	21,091	First Rem	6,702.4	919,740
	101-120	12.1		164.0	26,970	First Rem	2,970.6	446,497
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**27.4**		**528.8**	**78,868**		**14,649.2**	**1,865,464**
	Forest Unit Subtotal	**27.4**		**638.6**	**94,018**		**20,865.6**	**2,749,904**
Low-CC	B&S						985.1	
	1-20			14.2			207.9	
	21-40						318.6	10,150
	41-60			77.0	4,313		4,132.5	294,090
	61-80	88.3		65.0	3,334		10,734.7	973,717
	81-100	232.4		772.7	71,315		19,244.9	1,961,203
	101-120	135.9		129.7	16,742		5,966.4	573,165
	121-140	161.5		231.7	26,822		1,728.2	145,982
	141-160			133.1	7,185		743.8	51,047
	161-180						61.7	4,012
	181-200						25.3	2,978
	201+						96.3	
	Forest Unit Subtotal	**618.1**		**1,423.4**	**129,711**		**44,245.4**	**4,016,344**
Low-SEL	All	8.5		110.9	12,272		3,733.2	350,006
	Forest Unit Subtotal	**8.5**		**110.9**	**12,272**		**3,733.2**	**350,006**
PineOak-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120							
	121-140					Final Rem	40.5	3,929
	141-160					Final Rem	20.0	2,794
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal						**60.5**	**6,723**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of lanagemer	Available	
		(ha)	(m3)	(ha)	(m3)		(ha)	(m3)
PineOak-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120					First Remo	747.7	101,582
	121-140					First Remo	111.4	16,414
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal						**859.1**	**117,996**
PineOak-US	B&S							
	1-20					Prep. Cut	139.6	
	21-40					Prep. Cut	192.4	12,389
	41-60			15.7		Prep. Cut	1,143.8	88,122
	61-80	24.0				Prep. Cut	2,100.4	211,616
	81-100							
	101-120							
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**24.0**		**15.7**			**3,576.2**	**312,127**
PineOak-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80	53.7				Seed Cut	2,643.9	264,283
	81-100	297.3				Seed Cut	3,507.9	453,952
	101-120					Seed Cut	715.8	112,337
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**351.0**					**6,867.6**	**830,572**
	Forest Unit Subtotal	**375.0**		**15.7**			**11,363.4**	**1,267,418**
PoMix-CC	B&S						7,697.1	208
	1-20	1.4		25.2			3,519.8	4,622
	21-40						4,664.1	209,117
	41-60	192.0		50.5	4,895		22,623.7	2,077,588
	61-80	576.6		278.9	32,109		54,185.7	5,874,571
	81-100	199.9					9,312.6	1,114,000
	101-120			57.8	3,931		772.8	81,577
	121-140						75.2	6,637
	141-160							
	161-180						8.0	
	181-200							
	201+							
	Forest Unit Subtotal	**969.9**		**412.4**	**40,935**		**102,859.0**	**9,368,320**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of	Available	
		(ha)	(m3)	(ha)	(m3)	anagemer	(ha)	(m3)
MxPwPr-ST	B&S							
	1-20						28.6	
	21-40						7.2	323
	41-60						193.6	21,079
	61-80						575.2	72,526
	81-100						601.3	103,260
	101-120						87.1	17,770
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal						**1,493.0**	**214,958**
Pw-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120							
	121-140							
	141-160					Final Rem	76.5	11,985
	161-180							
	181-200					Final Rem	10.6	986
	201+							
	Stage of Management Subtotal						**87.1**	**12,971**
Pw-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80							
	81-100							
	101-120	39.0		12.6	2,055	First Remo	856.8	152,585
	121-140	6.4		6.5	1,053	First Remo	554.0	78,836
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**45.4**		**19.1**	**3,108**		**1,410.8**	**231,421**
Pw-US	B&S					Prep. Cut	2,089.1	
	1-20			44.2		Prep. Cut	3,759.0	1,166
	21-40					Prep. Cut	713.3	23,433
	41-60					Prep. Cut	351.5	35,407
	61-80					Prep. Cut	1,152.9	125,048
	81-100							
	101-120							
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal			**44.2**			**8,065.8**	**185,054**
Pw-US	B&S							
	1-20							
	21-40							
	41-60							
	61-80	35.7		16.8	2,940	Seed Cut	1,925.5	266,548
	81-100	47.8				Seed Cut	6,999.7	1,060,355
	101-120					Seed Cut	3,839.8	656,114
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Stage of Management Subtotal	**83.5**		**16.8**	**2,940**		**12,765.0**	**1,983,017**
	Forest Unit Subtotal	**128.9**		**80.1**	**6,048**		**22,328.7**	**2,412,463**
	Grand Total	**4,537.9**		**7,986.0**	**827,443**		**578,141.0**	**60,223,291**

Source: Table FMP-9 1999-2004 FMP

Note: Volumes for Protection Forest not calculated by the SFMMTool Program

2006 Independent Forest Audit - Nipissing Forest
TABLE 5c - SUMMARY OF MANAGED PRODUCTIVE FOREST BY FOREST UNIT
1994-1999 TMP **Excludes Crown wood on Patent Land**

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of	Available	
		(ha)	(m3)	(ha)	(m3)	lanageme	(ha)	(m3)
BF1	B & S							
	1-20						5,787	
	21 - 40						5,206	
	41-60						5,847	
	61-80						15,970	
	81 - 100						1,944	
	101 - 120						418	
	121 +						731	
	Total						**35,903**	
BW1/BW3	B & S							
	1-20						10,757	
	21 - 40						4,224	
	41-60						18,777	
	61-80						51,071	
	81 - 100						9,368	
	101 - 120						1,720	
	121 +						1,252	
	Total						**97,169**	
OC1	B & S							
	1-20						2,707	
	21 - 40						113	
	41-60						813	
	61-80						2,577	
	81 - 100						5,369	
	101 - 120						5,375	
	121 +						13,049	
	Total						**30,003**	
PJ1	B & S							
	1-20						1,870	
	21 - 40						313	
	41-60						2,110	
	61-80						10,399	
	81 - 100						817	
	101 - 120						549	
	121 +						40	
	Total						**16,098**	
PO1/PO3	B & S							
	1-20						14,379	
	21 - 40						4,133	
	41-60						19,475	
	61-80						44,385	
	81 - 100						8,816	
	101 - 120						1,284	
	121 +						138	
	Total						**92,610**	
PR1	B & S							
	1-20						6,170	
	21 - 40						2,046	
	41-60						617	
	61-80						1,382	
	81 - 100						2,182	
	101 - 120						221	
	121 +						50	
	Total						**12,668**	
PW1/PWU	B & S							
	1-20						12,498	
	21 - 40						723	
	41-60						1,705	
	61-80						8,644	
	81 - 100						17,904	
	101 - 120						9,073	
	121 +						4,462	
	Total						**55,009**	
SP1	B & S							
	1-20						8,240	
	21 - 40						1,115	
	41-60						5,632	
	61-80						23,571	
	81 - 100						22,099	
	101 - 120						6,244	
	121 +						2,620	
	Total						**69,521**	
SEL/TH1	B & S							
	1-20						17,269	
	21 - 40						4,000	
	41-60						14,625	
	61-80						43,964	
	81 - 100						27,425	
	101 - 120						15,396	
	121 +						41,663	
	Total						**164,342**	
All	B & S							
	1-20						79,677	
	21 - 40						21,873	
	41-60						69,601	
	61-80						201,963	
	81 - 100						95,924	

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of lanageme	Available	
		(ha)	(m3)	(ha)	(m3)		(ha)	(m3)
	101 - 120						40,280	
	121 +						64,005	
	Grand Total						573,323	

Source: Table 4.9 1994-1999 TMP - Data only available by Working Group

2001 Independent Forest Audit
Table 5d - SUMMARY BY TOTAL AGE CLASS STRUCTURE FOR MANAGED PRODUCTIVE FOREST

	All Forest Units			
	Past Plans			Current
	1990-1994[1]	1994-1999[2]	1999-2004[3]	2004-2009[4]
B&S/NSR	29,041	0	23,622	49,978
1-20	13,644	79,677	27,315	19,983
21-40	21,795	21,873	25,163	25,134
41-60	66,647	69,601	88,673	52,140
61-80	191,797	201,963	209,605	166,194
81-100	96,778	95,924	138,986	136,817
101-120	40,425	40,290	41,703	59,628
121+ / 121-140	57,450	64,005	15,853	17,844
141-160			4,374	6,288
161-180			1,240	3,214
181-200			968	628
200+			639	1,121
Total	**517,577**	**573,323**	**578,141**	**538,970**

[1] Source: 2001 Forest Managers Report

[2] Source: Table 5c

[3] Source: Table 5b

[4] Source: Table 5a

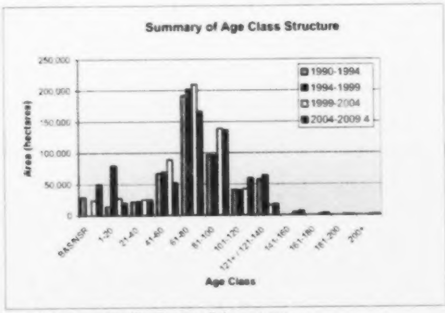

Figure 4 - Summary of Age Class Structure (all planning terms)

Appendix B: Audit Team Members and Qualifications

The IFAPP identified the following qualifications for Audit Teams:

Lead Auditor:

- must have a minimum of 7 years recent and relevant experience in forest management and forest operations, in similar types of forests, preferably in Ontario;
- must be trained in auditing procedures and have current forest auditing experience; and
- ideally is certified as an environmental auditor.

Audit Team:

- minimum of two people with experience in forest management planning and forest operations;
- a minimum of one wildlife biologist and/or ecologist;
- minimum of one person with experience in assessing: socioeconomic profiles and the social and economic impacts which may result from forest management planning decisions; public consultation processes in the context of forest management; and First Nations involvement in forest management planning;
- for each individual, minimum of 7 years recent and relevant experience in forest management and forest operations in similar forest types, preferably in Ontario;
- ideally, some Audit Team members will be certified as environmental auditors;
- at least one member of the Audit Team must have demonstrated experience and/or training in the requirements of the FMPM including the strategic direction and determination of sustainability component;
- at least one member of the Audit team shall be a Registered Professional Forester; and
- team size is a minimum of three.

The team for this audit, described in Table B - 1 below, included five people in the following positions: Lead Auditor and Harvesting and Modelling Forester, Wildlife and Roads Expert, Silviculturalist, Planning Auditor, and Consultation Auditor.

Table B - 1. The Roles, Responsibilities, and Qualifications of the Audit Team

Name/Company	Role	Responsibilities	Credentials
Mr. Chris Wedeles ArborVitae Environmental Services Ltd.	Lead Auditor, Wildlife and Roads Expert	• overall audit coordination; • oversee activities of other team members; • liaise with Company and MNR; • review and inspect Areas of Concern Documentation and Practices; • review aspects of forest management related to environmental practices and wildlife integration;	B.Sc., M.Sc. (Wildlife Biology); 19 years wildlife and forest ecology and experience in Ontario; completed approx. 25 previous forest audits; certified as an auditor by the Quality Management Institute.
Dr. Jeremy Williams, RPF ArborVitae Environmental Services Ltd.	Harvesting and Modelling Forester	• review and inspect forest harvesting records and practices; • review aspects of forest management related to forest economics and social impacts • reviews FMP modelling inputs and activities	B.Sc.F., Ph.D. (Forest Economics); 18 years consulting experience in Ontario related to forest management, planning, wood supply modelling, and forest economics; participated in approx. 15 previous auditing assignments; certified as an auditor by the Quality Management Institute.
Mr. Rob Arnup, Rob Arnup Consulting	Silviculturist	• review and inspect silvicultural practices and related documentation; • review and inspects selected environmental aspects of forest management	B.Sc. Hons. (Biology). Twenty-three years experience in forest management in Ontario; author or co-author of several silvicultural guides and operational manuals; participated in five previous auditing assignments.
Mr. Mark Fleming, RPF Fleming Forestry Consultants	Planning Auditor	• review FMP and related documents to ensure compliance with FMPM and other regulations	Hon. B.Sc.F., R.P.F. 20 years experience in forest management in Ontario as a consultant, working as a regional OMNR planning specialist, and operations forester with industry; Trained lead auditor for ISO 14001 and Smartwood/FSC .
Mr. J.P. Gladu. R.P.F. Aboriginal Strategy Group	Consultation Auditor	• review documentation related to forest management consultation processes • Consult with stakeholders, LCC, and First Nations regarding forest management issues	B. Sc. (Native American Forestry) Mr. Gladu is one of few Aboriginal Foresters in Canada. His experience has focused on Aboriginal issues, related to, economic development, forest based policy, certification, and criteria and indicator development This is his first IFA.

Appendix C: Independent Forest Audit Guiding Principles

The IFAPP identifies several components of the audit process. The audit protocol constitutes the main framework for the audit. There are eight principles within the audit protocol (Table C - 1). Each principle contains a series of criteria which, if met, will result in the principle being achieved. For each criterion, a number of procedures are used to assess the auditees compliance and effectiveness.

Table C - 1. The Eight Principles Underlying the Audit Protocol, as noted in the IFAPP.

1. Commitment
Commitment is reflected in vision, mission and policy statements of the Company. Vision and mission statements are intended to provide long-term guidance for the organization. Policy statements reflect how the organization's vision and mission will be achieved. These statements must be reflected in the day-to-day operations of the organization.

2. Public Participation
The process of sustainable forest planning, implementation and monitoring is conducted in an open consultative fashion, with input from all members of the planning team, Local Citizens Committee, native groups, and other parties with an interest in the operations of the forest unit.

3. Forest Management Planning
The forest management planning process involves the input of a number of individuals and groups to describe the current condition of the forest, the values and benefits to be obtained from the forest, the desired condition of the forest in the future, and the best methods to achieve that goal. Certain minimum standards and procedures have been established upon which all management units are evaluated.

4. Plan Implementation
Verification of the actual results of operations in the field compared to the planned operations is required to be able to assess achievement of the plan objectives and compliance with laws and regulations. In conjunction with the review of operations, the reporting tables are tested to ensure accurate results are reported.

5. System Support
System support concerns resources and activities needed to support plan implementation so as to achieve the desired objectives. Appropriate control, documentation and reporting procedures must be in place and operational. Planned action should occur at planned times, in planned places and to the planned degree.

6. Monitoring
The activities and the effects of these activities in achieving management objectives must be regularly measured and assessed. In particular, the indicators of achievement must be assessed and their effectiveness reviewed.

7. Achievement of the Management Objectives and Forest Sustainability
Periodic assessments of the management of the forest unit operations and the forest unit must be made in order to determine whether forest sustainability and other management objectives are being achieved. This includes comparing the actual values of the predetermined indicators against the planned values and assessing the reasons for any significant deviations.

8. Contractual Compliance
The licence must comply with the specific requirements of the SFL.

Appendix D: List of Acronyms

AOC	Area of Concern
AHA	Available Harvest Area
AR	Annual Report
AWG	Aboriginal Working Group
AWS	Annual Work Schedule
B.Sc.	Bachelor of Science
B.Sc.F	Bachelor of Science in Forestry
BW	White Birch/Poplar Mixed Forest Unit
CFSA	Crown Forest Sustainability Act
Class EA	Class Environmental Assessment for Timber Management on Crown Lands in Ontario
DFCC	Desired Future Forest Condition
DM	District Manager
EMA	Enhanced Management Area
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FOP	Forest Operations Prescription
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FRWI	Forest Roads and Watercrossings Initiative
FTG	Free-to-Grow
GIS	Geographic Information System
GLSL	Great Lakes-St. Lawrence
GPS	Global Positioning System
ha	Hectares
HDSEL	Tolerant Hardwood Selection Forest Unit
HDUS	Tolerant Hardwood Uniform Shelterwood Forest Unit
HE	Hemlock Forest Unit
km	kilometres
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
LCC	Local Citizens Committee
LWMX	Lowland Mixedwood Forest Unit
m^3	cubic meters
MA	Management Alternative
MAFA	Moose Aquatic Feeding Area
MCL	Mixed Conifer Forest Unit
MNR	Ontario Ministry of Natural Resources
MOA	Memorandum of Agreement
MOEE	Ministry of the Environment and Energy
M.Sc.	Master of Science
MROL	Ministry Approved Operating Level
MW	Mixedwood Forest Unit
NDPEG	Natural Disturbance Pattern Emulation Guide
NFRM	Nipissing Forest Resources Management Inc.
NHIC	Natural Heritage Information Centre

NRVIS	Natural Resource Values Information System
NSR	Not Satisfactorily Regenerated
PJ	Jack Pine Forest Unit
PJSB	Jack Pine Upland Black Spruce Forest Unit
PO	Poplar Forest Unit
PR	Red Pine Forest Unit
PWST	White Pine Seed Tree Forest Unit
PWUS	White Pine Uniform Shelterwood Forest Unit
RPF	Registered Professional Forester
RPFO	Report of Past Forest Operations
RSA	Resource Stewardship Agreement
SGR	Silvicultural Ground Rule
SF	Spruce/Fir Forest Unit
SFL	Sustainable Forest Licence
SFM	Sustainable Forest Management
SFMM	Strategic Forest Management Model
SGR	Silvicultural Ground Rules
SEIM	Socio-Economic Impact Model
TOR	Terms of Reference
VTE	Vulnerable Threatened or Endangered
YB	Yellow Birch Forest Unit

Appendix E Summary of Input to the Audit Process

General Public/Other Stakeholders

Two approaches (in addition to meeting with the LCC and interviewing its members) were used to encourage the public to provide input into the audit: 1) a sample of approximately 400 individuals/organizations on the MNR's FMP mailing list were sent a brief questionnaire asking for input on the management of the forest; and 2) Advertisements were placed in local newspapers soliciting input. A special audit e-mail account was established for individuals to respond to.

In response to these attempts we received 20 responses. Many of the responses either lauded the company and MNR for doing a good job of forest management or presented a position of satisfaction with the managers' efforts. For those comments which were tractable, and inside the scope of the audit, the Audit Team pursued and resolved them with representatives of the company and/or MNR. Several of the responses identified more than one concern. In approximate order of the frequency with which they were expressed, following is a list of issues identified in returned questionnaires and accompanying letters:

- General comments against clearcutting
- Concern about the extent of access infrastructure on the Forest
- Concern regarding the effects of clearcutting on wildlife
- Concern regarding unburned slash piles and timber waste
- Concern regarding the effects of forest management on furbearers
- Concern about oak regeneration
- Concern regarding a decrease in old-growth on the Forest
- Concern that poplar is replacing conifers and intolerant hardwoods
- Concern that pine regeneration does not produce good wildlife habitat

To the extent that the issues raised by the public were in the purview of the IFA, there were considered by the auditors.

Local Citizens' Committee

Members of the LCC participated in the pre-audit meeting and held an evening meeting during the week at which discussions included the role of the LCC in the audit. These meetings provided an opportunity for LCC members to have direct contact with the Audit Team to provide any relevant information regarding SFM on the Nipissing Forest. As well a representative of the LCC participated in the site visits for one day. One LCC member participated in the field site inspections conducted on the Forest during the audit week. Most LCC members were been contacted in order to extend a invitation to be interviewed by the Audit Team and most accepted the invitation.

Topics identified by the LCC included:

- Great satisfaction with the manner in which their district MNR contact has provided service to them;

- Concern with the level of logistic and financial support provided by the MNR to attend/host regional LCC meetings;
- Concerns related to access management on the forest;
- Concerns related to wildlife habitat;
- White-pine management;
- Integration of recreational, tourism, and timber management; and
- The role of the LCC in planning.

The issues raised by members of the LCC were considered in this audit.

Native Communities

There are five First Nations with an interest in the Nipissing Forest: Dokis First Nation, Nipissing First Nation, Temagami First Nation, Antoine First Nation, and Mattawa First Nation. All Five were interviewed for this Audit. Topics of discussion included

- Incorporation of values into forest management;
- Degree of satisfaction with economic opportunities provided ;
- Degree of satisfaction with the nature of various employment opportunities Provided;
- Satisfaction with rapport with MNR and NFRM;
- First Nations values associated with the broader forest ecosystem;
- Satisfaction with consultation opportunities offered to the communities;
- Satisfaction with the extent of consultation which occurred; and
- Aspirations of ownership in the SFL holding company and greater say in the direction of forest management.

All of these topics were considered by the Audit Team in developing this report.

SFL Holder

NFRM Staff were interviewed many times over the course of the audit. Virtually all topics identified in this report were the subject of conversation between NFRM and the auditors. Some of the topics discussed in detail with NFRM staff included:

- The commitment of the Company and its shareholders towards sustainable management of the forest
- The Company's efforts in working with First Nations;
- The degree of satisfaction with the Sustainable Forest Licence;
- Difficulties associated with implementation of the NDPEG guidelines;
- Several issues associated with the historical underharvest of the forest;
- Efforts associated with the Company's silvicultural program;
- Difficulties associated with access management;
- Efforts associated with public consultation and education;
- The Company's efforts associated with developing Resources Stewardship Agreements
- Issues faced by the Company due to the lack of stream classification information, and lack of reliable information related to private land boundaries;

All of these topics were considered in the course of the audit.

Ministry of Natural Resources

Staff from the Ministry of Natural Resources provided the auditors with much input through interviews, group discussions, and written submissions. Ministry staff raised a number of issues for consideration during the audit, including:

- The suitability of the NDPEG guidelines in areas to be restored to white and red pine;
- The application of the NDPEG guidelines and the Ministry policy on salvage of timber;
- The state of actions intended to address the previous audit's recommendations;
- The performance of the LCC;
- Efforts related to addressing the recommendations of the previous IFA;
- The timing of the preparation of the stewardship inventory;
- Values updating processes for the Forest;
- Identification of native values;
- Uncertainty regarding roads management funding;
- Concern regarding the state of some planted stock in areas experiencing heavy competition;
- Management of intermittent and non-permanent streams;
- Differences in compliance assessments between the industry and MNR; and
- Satisfaction with many aspects of forest management.

All of these topics were considered in the course of the audit.